

## Robert Peter Gale MD, PhD, DSc (hon), FACP

Robert Peter Gale was born in New York City in 1945. He received his A.B. degree with high honors in biology and chemistry from Hobart College in 1966 and his M.D. degree from the State University of New York at Buffalo in 1970 (with Evan Caukins, Robin Bannerman and John Edwards). His postgraduate medical training (internal medicine, hematology and oncology) was at the University of California, Los Angeles (UCLA) from 1970-1973 (with William Valentine and David Solomon). In 1976, Dr. Gale received a Ph.D. in microbiology and immunology from UCLA following doctoral work focusing on cancer immunology (with John Fahey). His postdoctoral studies at UCLA were funded by the U.S. National Institutes of Health (NIH) and the Leukemia Society of America, where he was the Bogart Fellow and Scholar.

From 1973-1993, Dr. Gale was on the faculty of the UCLA School of Medicine in the Department of Medicine, Division of Hematology & Oncology where he focused on the molecular biology, immunology and treatment of leukemia (with Martin Cline and David Golde). He also developed the bone marrow transplant program supported by the NIH. At UCLA, he was active in the Department of Psychology (with John Liebeskind) where he and his colleagues studied interactions between stress, immunity and cancer.

Dr. Gale has published over 800 scientific articles and more than 20 books, mostly on leukemia (biology and treatment), transplantation (biology, immunology and treatment), cancer immunology and radiation (biological effects and accident response). He has written on medical topics, nuclear energy and weapons and politics of US-Soviet relations in articles for The New York Times, Los Angeles Times, Washington Post, USA Today and Wall Street Journal.

From 1980 -1997, he was Chairman of the Scientific Advisory Committee of the International Bone Marrow Transplant Registry (IBMTR), an organization of more than 400 transplant centers in over 60 countries working together to analyze and advance knowledge about blood cell and bone marrow transplants (with Mortimer Bortin and Mary Horowitz). Since 1989, Dr. Gale was a member of the Scientific Advisory Board of the Autologous Blood and Marrow Transplant Registry (ABMTR). In 1989-2003 Dr. Gale chaired the Scientific Advisory Board of the Center for Advanced Studies in Leukemia, a charity funding innovation leukemia research. From 1986-1993, Dr. Gale was president of the Armand Hammer Center for Advanced Studies in Nuclear Energy and Health, a foundation supporting research on medical aspects of nuclear issues.

From 1993-1999, Dr. Gale was Senior Physician and Corporate Director of Bone Marrow and Stem Cell Transplantation at Salick Health Care (SHC), Inc. in Los Angeles (now Aptium Oncology), a subsidiary of AstraZeneca Corp. where he was responsible for developing cancer treatment guidelines (in collaboration with colleagues at RAND Corp. and Value Health Sciences) and for studying medical aspects of managed cancer care.

From 2000-2004 Dr. Gale was Senior Vice-President for Medical Affairs at Antigenics, Inc., in New York where he was responsible for design, implementation and analysis of clinical trials of anti-cancer vaccines. He was also a Senior Medical Consultant to Oxford Health Plans in areas of advanced medical technologies.

From 2004 to 2007, Dr. Gale was Senior Vice-President of Research for ZIOPHARM Oncology, Inc. in Charlestown, MA and New York, NY which he co-founded with Jonathan Lewis. His focus was on developing and testing new cancer therapies.

In 2007 Dr. Gale joined Celgene Corp. (Summit, NJ) where he is Executive Director of Clinical Research, Hematology and Oncology. His activities include development and execution of clinical trials in blood and bone marrow cancers, transplantation and immune disorders.

Dr. Gale and Dr. Leo Kim founded ASNA ventures in September, 2011. ASNA is focused on discovering and developing biotechnology opportunities for industry and venture capital.

Leukemia and other bone marrow disorders (such as aplastic anemia) are the central theme of Dr. Gale's basic scientific and clinical research for over 35 years.

He and his colleagues have contributed to understanding the molecular biology and immunology of leukemia. While at the Weizmann Institute of Science, he and Eli Canaani identified the molecular basis of chronic myelogenous leukemia (CML) which has led to successful drug development and potentially curative therapy. Dr. Gale has also extensively studied the immunology of leukemia in animals and humans (with Kenneth Foon). While at Rockefeller University he unraveled genetic aspects of leukemia-risk in Fanconi anemia (with Arleen Auerbach). His interest and expertise in radiation biology stems from its ability to cause leukemia in humans and parallels between radiation-induced bone marrow failure and aplastic anemia. In the clinical research forum, Dr. Gale and his colleagues developed new drug-based therapies for acute myelogenous leukemia (with Martin Cline) and studied efficacy of supportive care interventions (with Drew Winston and Winston Ho) including antibiotics, anti-fungal drugs, granulocyte transfusions and molecularly-cloned hematopoietic growth factors (like GM-CSF). He has also extensively analyzed treatment strategies for acute lymphoblastic leukemia (ALL) with Dieter Hoelzer); Acute myelogenous leukemia (AML) and CML with John Goldman and Rudiger Hehlman; Chronic lymphocytic leukemia (CLL) with Kenneth Foon and Kanti Rai. Dr. Gale has also been active in aplastic anemia research and the relationship between bone marrow failure and leukemia in human models of this relationship (like Fanconi anemia) and in leukemia epidemiology.

Dr. Gale has contributed greatly to basic science and clinical research in bone marrow transplantation where he made central contributions to understanding the immune-mediated anti-leukemia effects of transplants (graft-versus-leukemia [GvL]; with Mortimer Bortin and Mary Horowitz)). He has also advanced understanding other complex immune effects of transplants in

humans, like graft-versus-host disease and posttransplant immune deficiency. He has worked extensively on alternate sources of hematopoietic stem cells including fetal liver transplants (with Richard Champlin).

Increasingly, he has focused on issues of clinical trials design, implementation and analysis and in the use of observational databases and group consensus processes (with Ed Park and Robert Dubois) to determine effective cancer treatments.

Dr. Gale was on the faculty of UCLA, is currently on the Medical Staff and is Visiting Professor of Haematology at the Imperial College London, Section of Haematology, Division of Experimental Medicine, Department of Medicine, London, UK (with John Goldman and Jane Apperly). He has been a visiting professor, scholar or lecturer at many universities including Weizmann Institute of Science (Meyerhoff Visiting Scientist 1983-84), Academy of Medical Sciences-USSR, All-Union Cancer Center-USSR, Universities of Cape Town, Bologna, Michigan and Rome, Cornell Univ., Tokyo Univ., Tufts Univ., Uppsala Univ., Roswell Park Cancer Center, Cleveland Clinic, Swedish National Radiation Protection Board, UK Royal College of Physicians and The UK Royal Society of Pathology.

Dr. Gale is a Fellow of the American College of Physicians, a member of the Royal Society of Medicine and an honorary fellow of the Russian Academy of Medical Science. He is a Diplomat of the American Board of Internal Medicine in Internal Medicine and Oncology and board-eligible for hematology.

In addition he is a member of several learned societies including The American Association for the Advancement of Science, American Association of Immunologists and American Federation for Cancer Research, American Federation for Clinical Research, American Society for Clinical Oncology, American Society of Hematology, International Society of Hematology, International Society of Experimental Hematology and others.

Dr. Gale is on the editorial boards of several scientific journals including Bone Marrow Transplantation, Leukemia Research, Clinical Transplantation, Case Reports in Medicine and others and reviews articles for the New England Journal of Medicine, Lancet, Annals of Internal Medicine, JAMA, Journal of Clinical Oncology and Transplantation amongst others.

Dr. Gale has received many awards for his scientific achievements and contributions including the Presidential Award, New York Academy of Science, Scientist of Distinction Award Weizmann Institute of Science, Distinguished Alumni Award from Hobart College and Intra-Science Research Foundation Award. He holds honorary degrees including D.Sc. from Albany Medical College, L.H.D. from Hobart College and D.P.S from MacMurray College.

Dr. Gale is also widely recognized for his humanitarian activities. In 1986, he was asked by the government Soviet Union to coordinate medical relief efforts for victims of the Chernobyl nuclear power station accident. In 1987, he was asked by the government of Brazil to coordinate medical relief efforts for a

radiation accident in Goiania. In 1988, he was part of the U.S. medical emergency team sent in the aftermath of the earthquake in Armenia. In 1999 he was asked by the government of Japan to help treat victims of the nuclear criticality accident near Tokyo. In 2011 Gale was called to Japan to deal with medical consequences of the Fukushima nuclear power station accident. He met with members of the Prime Minister's office and addressed the Diet on 3 occasions. He has also been a neutral war observer for the governments of Croatia and Armenia and a medical consultant to the government of Tartarstan. Dr. Gale has received several awards for his humanitarian activities including the Olender Peace Prize, City of Los Angeles Humanitarian Award, Myasthenia Gravis Foundation Humanitarian Award and an Honorary Medals from the Russian and the Ukraine Academies of Medical Science.

Dr. Gale's public service includes giving expert testimony to several US Congressional Committees on health policy issues, consultation for US Public Health Service, Office of Technology Assessment (OTA), Agency for Health Care Policy and Research AHCPR), the Task Force on Neurosciences of the US Office of Technology Assessment, California Senate Task Force on Emergency Medical Response for Nuclear Accidents

In addition to his academic publications, Dr Gale has written popular books on Chernobyl and US nuclear energy policy: "Final Warning: The Legacy of Chernobyl" (with Thomas Hauser) Warner Books in 1988 and "Radiation: What It Is, What You Need To Know" (with Eric Lax) published by Knopf in 2013. He frequently appears on TV news, and received an Emmy for his work on a 60 Minutes special report. He has written parts of screenplays for and/or appeared in several movies including Final Warning (with Jon Voight), Fat Man and Little Boy (with Paul Newman) and City of Joy (with Patrick Swazy). He was best boy in the movie Tomorrow's Yesterday.

Dr. Gale lives in Los Angeles, New York and Big Sky, MT with his wife Laura. They have 6 children between them in diverse sites and professions. Dr. Gale is active in marathon running, hiking, swimming, skiing, snowshoeing, mountain biking and rock- and ice-climbing.