The Future of Low-Dose Radiation Research in the United States

DRAFT

May 8-9, 2019

The National Academy of Sciences Building
Fred Kavli Auditorium
2101 Constitution Ave NW
Washington, DC 20418
Agenda

DAY 1: May 8, 2019

PLENARY SESSION: Setting the Stage
Moderated by Joe Gray, Oregon Health & Science University (OHSU)

8:30 AM

Call to Order and Welcome (10’)
Joe Gray, OHSU

Remembering Gilbert Beebe (10’)
Dale Preston, Hirosoft International

Low Dose Radiation and Societal Decisions (15’)
David Brenner, Columbia University

Status of Low-Dose Research in the United States (15’)
John Neumann, Government Accountability Office

Global Low-Dose Research Coordination (20’)
Ted Lazo, Organisation for Economic Co-operation and Development- Nuclear Energy Agency

Efforts to Coordinate Radiobiology Research in the U.S. Government (15’)
TBD, Office of Science and Technology Policy (inv)

10:00 AM Question and Discussion on Plenary Session

10:20 AM BREAK
SESSION 1: Low-Dose Radiation Programs
Moderated by Michaela Kreuzer, Federal Office For Radiation Protection, Germany

History of the U.S. Department of Energy Low Dose Radiation Research Program (20’)
Tony Brooks, Washington State University Tri-Cities

The Multidisciplinary European Low Dose Initiative (20’)
Michaela Kreuzer, Federal Office For Radiation Protection, Germany

The Low-Dose Radiation Research Program in Japan (20’)
Ignacia Braga-Tanaka III, Institute for Environmental Sciences, Japan

Low-Dose Radiation Research in Canada (20’)
Dmitry Klokov, Canadian Nuclear Laboratories

12:00 PM Questions and Discussion on Session 1
12:30 PM LUNCH (available for purchase at lower level cafeteria)
SESSION 2: Perspectives on Need for Low-Dose Research Program

Panel Group A: Government agency perspectives
Moderated by Ralph Andersen, Nuclear Energy Institute (retired)

- TBD, Department of Energy
- Mike Boyd, Environmental Protection Agency
- Armin Ansari, Centers for Disease Control and Prevention
- John Gilstad, Armed Forces Radiobiology Research Institute
- Mike Noska, Food and Drug Administration
- Jeri Anderson, National Institute for Occupational Safety and Health
- Steve Blattnig, National Aeronautics and Space Administration
- Terry Brock, Nuclear Regulatory Commission
- Andy Scott, Department of Homeland Security
- Jenny Goodman, Conference of Radiation Control Program Directors

2:50 PM Panel Discussion for Session 2, Part A

3:20 PM BREAK
Panel Group B: Other Stakeholders
Moderated by Jim Brink, Harvard Medical School

- Kathy Held, National Council on Radiation Protection and Measurements
- Nolan Hertel, Health Physics Society
- Alan Waltar, American Nuclear Society
- Donald Cool, Electric Power Research Institute
- Kimberly Applegate, Committee 3 of the International Commission on Radiological Protection
- Brian Marples, American Society for Radiation Oncology
- Larry Dauer, American Association of Physicists in Medicine

3:40 PM

4:30 PM
Panel Discussion for Session 2, Part B

5:00 PM
Closing Remarks for Day 1
Adjourn Day 1
8:30 AM
Call to Order and Welcome (10’)
Joe Gray, Oregon Health & Science University

SESSION 3: Current Directions for Low-Dose Radiation Research

Part A: Contributions from Epidemiological Studies
Moderated by Gayle Woloschak, Northwestern University

Atomic Bombing Survivors Studies (20’)
Bob Ullrich, Radiation Effects Research Foundation

Occupational Studies (20’)
David Richardson, University of North Carolina

Environmental Exposure Studies (20’)
Dale Preston, Hirosoft International

Medical Exposure Studies (20’)
Amy Berrington de González, National Cancer Institute

8:40 AM

10:10 AM
Questions and Discussion for Session 3 Part A

10:40 AM
BREAK

11:00 AM

Part B: Contributions from Radiation Biology
Moderated by David Richardson, University of North Carolina

Low Dose and Low Dose Rate Responses in Animals (15’)
Gayle Woloschak, Northwestern University

Molecular Injury Responses Triggered by Low Dose Radiation and Implications for Long-Term Effects in Normal Tissues (15’)
Al Fornace, Georgetown University

Epigenetic Alterations from Low-Dose Radiation (15’)
Randy Jirtle, North Carolina State University

11:50 AM
Questions and Discussion for Session 3 Part B
12:15 PM LUNCH

1:30 PM SESSION 4: New Directions in Low-Dose Radiation Research
Moderated by Alexandra Miller, Armed Forces Radiobiology Research Institute

Biomarkers for Molecular Epidemiological Studies (20’)
Janet Hall, French National Institute of Health and Medical Research (INSERM)

Technological Advancements (30’)
- Joe Gray, OHSU
- Sadik Esener, OHSU

Single Cell Genomics (15’)
Charles Gawad, St. Jude Children's Research Hospital

Immune Response (15’)
Silvia C. Formenti, Weill Cornell Medicine

Systems Biology (15’)
Francis Cucinotta, University of Nevada, Las Vegas

Microbiome (15’)
Amy Kronenberg (or designee), Lawrence Berkeley National Laboratory

3:30 PM Questions and Discussion for Session 4

4:00 PM BREAK
SESSION 5: Models for Coordinated Research  
Moderated by Joe Gray, OHSU

Lessons learned from Coordinated Research on the Health Effects of Air Pollution (20’)
Dan Greenbaum, Health Effects Institute

Lessons Learned from Large-Scale Biology Initiatives (20’)
Anna Barker, Arizona State University

5:05 PM  
Discussion on Session 5 and Applications on Future Low-Dose Radiation Research Program

5:30 PM  
Closing Remarks  
Joe Gray, OHSU

5:35 PM  
Adjourn
Symposium Organizing Committee

Biographies

Joe W. Gray (Chair) is the Director, OHSU Center for Spatial Systems Biomedicine; and Associate Director for Biophysical Oncology, Knight Cancer Institute. He applies ‘omic and imaging technologies to elucidate mechanisms by which cancers become resistant to treatment and uses this information to develop therapeutic strategies to more durably control advanced cancers. He also serves on the Board of Councilors for the Radiation Effects Research Foundation. He has more than 500 publications and 80 US patents. Major awards include the E.O. Lawrence Award, U.S. Department of Energy; Curt Stern Award, American Society for Human Genetics; the Alfred G. Knudson Award in Cancer Genetics, National Cancer Institute, election as a Fellow of the American Association for Cancer Research and election to the National Academy of Medicine.

Ralph Andersen was the senior director of radiation safety & environmental protection at the Nuclear Energy Institute (NEI) in Washington, DC. He represented the nuclear energy industry to the Congress, the Administration, federal agencies, and other national and international organizations on management and environmental protection. Prior to joining NEI in 1992, Mr. Andersen worked for 20 years in radiation protection in the areas of nuclear energy, research, education, and medicine. During that time, he has held such positions as radiation protection manager at the Fermi 2 nuclear power plant, director of safety assessment and environmental protection for the Detroit Edison Company, radiation safety officer and lecturer in the Department of Physics and Astrophysics at the university of Colorado, and principal researcher and associate radiation safety officer at the University of Maryland Medical Center. Mr. Andersen is a certified as a health physicist by the American Board of Health Physics and is a U.S. delegate to the International Radiation Protection Association (IRPA). He received his B.A. degree from the University of Maryland and has completed graduate studies in the Department of Radiation Biology and Radiology at Colorado State University.

James A. Brink, MD, is chief of radiology at the Massachusetts General Hospital (MGH) and the Juan M. Taveras Professor of Radiology at the Harvard Medical School. Dr. Brink has expertise and broad experience in medical imaging, including utilization and management of imaging resources and monitoring and control of medical radiation exposure. Before joining MGH, Dr. Brink was an associate professor at the Mallinckrodt Institute of Radiology at Washington University School of Medicine and professor and chair of the Yale Department of Diagnostic Radiology. He is a fellow of the Society for Computed Body Tomography/Magnetic Resonance, past-president of the American Roentgen Ray Society, fellow and chair (effective May 17, 2016) of the Board of Chancellors of the American College of Radiology, and scientific vice-president and member of the Board of Directors of the National Council for Radiation
Protection and Measurements. He earned his M.D. degree at Indiana University and completed his medical residency and fellowship at MGH.

David Richardson is Associate Professor of Epidemiology in the School of Public Health at the University of North Carolina at Chapel Hill. His research focuses on the health effects of occupational and environmental exposures, particularly with regards to ionizing radiation. He has conducted studies of cancer among nuclear workers in the US and abroad, as well as studied cancer among the Japanese survivors of the atomic bombings of Hiroshima and Nagasaki. He has served as a visiting scientist at the World Health Organization’s International Agency for Research on Cancer, the French Institute for Radiological Protection and Nuclear Safety, and at the Radiation Effects Research Foundation in Hiroshima, Japan. Since 2007, he has served as Director of the National Institute of Occupational Safety and Health-funded training program in occupational epidemiology at the University of North Carolina-Chapel Hill. In addition, he is a core faculty member at the Injury Prevention Research Center at the University of North Carolina, and a member of the Exposure and Biomarkers Research Core at the University’s Center for Environmental Health and Susceptibility. He is an Associate Editor of the journals Occupational and Environmental Medicine, American Journal of Epidemiology and Environmental Health Perspectives, and is a member of the President’s Advisory Board on Radiation and Worker Health. Dr. Richardson’s current research includes studies of mortality among nuclear industry workers and uranium miners, and development of innovative methods for occupational cancer studies. Dr. Richardson received a Ph.D. and M.S.P.H., both in epidemiology, from the University of North Carolina.

Michaela Kreuzer obtained a diploma in statistics from the Ludwig-Maximilians-University (LMU) in Munich in Germany in 1987 and a PhD in epidemiology in 1996. Since 2004 she is member of the Medical Faculty of the LMU (“Habilitation”) and private teacher (Priv.-Doz.) in epidemiology. Michaela Kreuzer started her scientific career in 1988 as epidemiologist at the Institute of Occupational Medicine, Heinrich-Heine University of Düsseldorf. In 1990 she moved into the research field “indoor radon and lung cancer” at the University of Wuppertal, Germany and the Institute of Epidemiology at the HelmholtzZentrum Munich (HMGU), Germany. Since 1998 she is working at the Federal Office for Radiation Protection (BfS) in Neuherberg in Germany, where she was previously heading the working group “Radiation Epidemiology” and is now heading the division “Effects and risks of ionizing and non-ionizing radiation”. She is principal investigator of the German uranium miner cohort study with nearly 60.000 radon-exposed miners. Michaela Kreuzer is member of the European research platform “Multidisciplinary European Low Dose Initiative (MELODI)”, which was founded in 2010. From 2014-2017 she was chair of the working group “Strategic Research Agenda (SRA)” and since 2018 vice-chair.

Gayle Woloschak, PhD, professor in the Feinberg School of Medicine Departments of Radiation Oncology, Radiology and Cell and Molecular Biology, is currently involved in nine federally funded research studies, acting as the principal investigator on five of them. A renowned scientist, Woloschak has published numerous articles in journals like Molecular Immunology, Nature Materials and Proceedings of the National Academy of Sciences (PNAS), and has her name registered on a long list of inventions. Woloschak has numerous faculty
appointments at universities across the world. In addition to her roles at Northwestern, she is also a visiting scientist at the Bundeswehr Institute for Radiobiology in Munich, Germany, lecturer at Rosalind Franklin Medical School in North Chicago, Ill., and visiting professor at Alexandria University in Alexandria, Egypt. Woloschak is co-leader of the Cancer Nano Materials Program in the Robert H. Lurie Comprehensive Cancer Center of Northwestern University, and is a member of the Center for Genetic Medicine, and the Northwestern Comprehensive Center on Obesity. What’s more, Woloschak is associate director of the Radiation Oncology Residency Program at Northwestern, and was the recipient of this program’s Teacher of the Year Award during the 2005-2006 academic year. Recently, Woloschak’s teaching abilities were recognized again when she was awarded the 2010 Rosalind Franklin University Outstanding College of Health Professions Educator Award.