Integration of Physics, Biology and Epidemiology in Radiation Risk Assessment

**Monday, March 27, 2023**

**Opening Session**

8:10 am **Presentation of the Colors**  
Joint Armed Forces Honor Guard  
from the Military District of  
Washington, DC

**Singing of the National Anthem**  
Kimberly Jordan  
*U.S. Nuclear Regulatory Commission*

8:15 am **NCRP Welcome**  
Kathryn D. Held  
*President, NCRP*

8:20 am **Introduction**  
Eric J. Grant, *Program Chair*  
Emily A. Caffrey, *Program Vice Chair*

**Nineteenth Annual Warren K. Sinclair Keynote Address**

8:30 am **Introduction of the Speaker**  
Kathryn D. Held

**What do Risk Modelers Want?**  
Michael M. Weil  
*Colorado State University*

**Setting the Stage with Epidemiology**

Lydia B. Zablotska & S. Robin Elgart,  
*Session Co-Chairs*

8:00 am **What Dose-Response Modeling Can, and Cannot, Tell Us About the Biological Mechanisms of Radiation Health Effects**  
Dale L. Preston  
*Hirosoft International*

9:00 am **Radiation-Related Cardiovascular Disease: Clinical and Epidemiological Studies**  
Andrew Einstein  
*Columbia University*  

9:40 am **Overview of NCRP Report No. 186: Approaches for Integrating Information from Radiation Biology and Epidemiology to Enhance Low-Dose Health Risk Assessment**  
R. Julian Preston  
*U.S. Environmental Protection Agency*

10:00 am **Break**

**Mechanistic Underpinnings: Cancer and Cardiovascular Disease**

Sally A. Amundson & R. Julian Preston,  
*Session Co-Chairs*

10:30 am **Low-Dose Effects: Insights from Low and High Linear-Energy Transfer Radiation**  
Albert J. Fornace, Jr.  
*Georgetown University*

11:00 am **Using Genomics to Investigate Radiation-Related Thyroid Cancer Following the Chernobyl Accident in 1986**  
Stephen J. Chanock  
*National Cancer Institute*

11:30 am **Precision Medicine with Induced Pluripotent Stem Cells and Application in Space Radiation Risk Assessment**  
Joseph C. Wu  
*Stanford Cardiovascular Institute*

12:00 pm **Mechanistic Underpinnings for Radiation-Induced Cardiovascular Disease**  
Marjan Boerma  
*University of Arkansas for Medical Sciences*

12:30 pm **Lunch**
Models and Extrapolations
Mark P. Little & Robert L. Ullrich,
Session Co-Chairs

2:00 pm  Human Biosamples for Translational Radiation Studies
Roy E. Shore
New York University Grossman School of Medicine

2:30 pm  An Overview of Approaches for Developing Bioindicators for Risk Estimation at Low Doses and Dose Rates
Dmitry Klokov
Institute for Radiological Protection and Nuclear Safety, France

3:00 pm  Mathematical Modeling Approaches in Oncology: Can Calculus Cure Cancer?
Helen M. Byrne
University of Oxford

3:30 pm  Estimating Radiation Risks at Very Low Doses: Radiobiologists, Epidemiologists and Modelers Can Do this Together
David J. Brenner
Columbia University

4:00 pm  New Technologies Provide Opportunities to Advance Radiation Research
James A. Lederer
Brigham and Women’s Hospital

4:30 pm  Break

Cancer Risks and Public Health Issues Across the Radiation Frequency Spectrum: The Long and the Short of It
Martha S. Linet
National Institutes of Health

5:00 pm  Introduction of the Lecturer
Jerrold T. Bushberg

Forty-Sixth Lauriston S. Taylor Lecture on Radiation Protection and Measurements

Tuesday, March 28, 2023

8:15 am  NCRP Annual Business Meeting

9:30 am  Break

Sixth Thomas S. Tenforde Topical Lecture

9:45 am  Introduction of the Lecturer
Eric J. Grant
Towards Evaluating Cell Damage via Microscopy Imaging and Analysis of Cell Organization
Susanne M. Rafelski
Allen Institute for Cell Science

Research Needs for Filling the Gaps

Emily A. Caffrey & Eric J. Grant,
Session Co-Chairs

10:15 am  Epidemiology v2.0: Some Ideas for the Path Forward
Jonine L. Bernstein
Memorial Sloan Kettering Cancer Center

10:30 am  Can Artificial Intelligence Improve Risk Assessment for Radiation-induced Adverse Health Outcomes?
Issam El Naqa
H. Lee Moffitt Cancer Center
Integration of Physics, Biology and Epidemiology in Radiation Risk Assessment

10:45 am  Computational Biology for Future Modeling of Diseases: Is Artificial Intelligence the Way of the Future?  
Afshin Beheshti  
National Aeronautics and Space Administration Ames Research Center

11:00 am  Looking Forward: Where Do We Go from Here?  
Simon Bouffler  
Public Health England

11:20 am  Panel Discussion:  
Simon Bouffler, Moderator  
Afshin Beheshti  
Jonine L. Bernstein  
Issam El Naqa  
Susanne M. Rafelski

12:10 pm  Wrap-Up  
Eric J. Grant, Program Chair  
Emily A. Caffrey, Program Vice Chair

12:20 pm  NCRP Vision for the Future and Program Area Committee Activities  
Kathryn D. Held  
President, NCRP

12:30 pm  Adjourn