National Cancer Institute: Leading Cancer Research in 2021 and Beyond

Norman E. Sharpless, M.D. Director

The Role of Companion Animals as Sentinels for Predicting Environmental Exposure Effects on Aging and Cancer Susceptibility in Humans: A Hybrid Workshop December 1, 2021

@NCIDirector
@TheNCI



NCI Extramural Grants Portfolio: Wide Range of Biomarkers & Environmental Exposures

MAJOR THEMES

- Inflammation
- Microbiomics
- Gene-environment
 interactions
- Integrative data analytic methods for risk prediction
- Infrastructure support for prospective cohort studies

'-OMIC' APPROACHES

- Albumin adductomics
- DNA adductomics
- DNA methylation
- Epigenetic aging
- Transcriptomics
- Metabolomics

Major NCI programs to study environmental exposures and cancer risk

NCI COHORT CONSORTIUM

SUPPORT FOR IARC MONOGRAPHS PROGRAM

CONNECT FOR CANCER PREVENTION STUDY

NIEHS/NCI AGRICULTURAL HEALTH STUDY

HUMAN STUDIES USING EXTERNAL EXPOSURE ASSESSMENT TO IDENTIFY ENVIRONMENTAL CARCINOGENS

Diesel Exhaust in Miners Study (DEMS) – *Lung Cancer*

New England Bladder Cancer Study - Arsenic, disinfection byproducts, nitrates in drinking water

Lung Cancer among never-smoking women in Xuanwei, China - *Methylated PAHs from bituminous coal used for home heating and cooking*

Multiple Myeloma in the Agricultural Health Study

Why pet dogs with spontaneous tumors are good models for human disease

Need for a spontaneous tumor model in immunocompetent animals that mimics human conditions and physiology

Bujak, J.K., Pingwara, R., Nelson, M.H. et al. Adoptive cell transfer: new perspective treatment in veterinary oncology. Acta Vet Scand 60, 60 (2018). https://doi.org/10.1186/s13028-018-0414-4



Breast Cancer and the Environment





Breast Cancer and the Environment: Controversial and Emerging Exposures

Virtual Workshop Summary Friday, May 14, 2021



U.S. Department of Health & Human Services | National Institutes of Health

- NCI-NIEHS meeting in May 2021 to discuss the evolving science and opportunities to advance our work in this area.
- Workshop summary available on cancer.gov.

New tools to better understand the effects of environmental carcinogens



NCI Symposium on **MUTATION SIGNATURES AND CANCER** December 2-3, 2021

https://events.cancer.gov/nci/mutationsignatures

Invited Speakers:

Ludmil Alexandrov, Ph.D., University of California, San Diego Maria Teresa Landi, M.D., Ph.D., National Cancer Institute Peter Campbell, Ph.D., Wellcome Trust Sanger Institute Phil Jones, M.D., Ph.D., University of Cambridge Elli Papaemmanuil, Ph.D., Memorial Sloan Kettering Gad Getz, Ph.D., Broad Institute Steven Rozen, Ph.D., Duke-NUS Allan Balmain, Ph.D., University of California, San Francisco Serena Nik-Zainal, M.D., Ph.D., University of Cambridge Reuben Harris, Ph.D., University of Minnesota Adam Shlien, Ph.D., University of Toronto Teresa Przytycka, Ph.D., National Center for Biotechnology Information David Wedge, Ph.D., University of Manchester Peter Park, Ph.D., Harvard University Joshua Campbell, Ph.D., Boston University Ludmila Prokunina-Olsson, Ph.D., National Cancer Institute Hannah Carter, Ph.D., University of California, San Diego Nuria Lopez-Bigas, Ph.D., IRB Barcelona



Thank you!

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