

Wednesday, March 10

9:00 - 4:30 pm

Full Day Workshop

A Primer on Cancer Biology and Plausible Mechanisms and Pathways for Stress-mediated Effects on Cancer Biology

Faculty: Paige McDonald, PhD, MPH, National Cancer Institute; Susan Lutgendorf, PhD, University of Iowa; Suzanne Conzen, MD, University of Chicago; Anil Sood, MD, MD Anderson Cancer Center; Erica Sloan, PhD, University of California, Los Angeles; and Edward L. Nelson, University of California, Irvine

The purpose of this preconference workshop proposal is to stimulate research interest in stress regulation of cancer biology. The educational objectives of the workshop are to:

1. Review the fundamentals of cancer biology;
2. Outline the principle components of stress biology that are most relevant to our understanding of stress regulation of cancer biology;
3. Highlight the most relevant tumor types and cancer biology processes that are vulnerable to stress regulation; and
4. Delineate the molecular mechanisms and pathways of stress-mediated effects on cancer biology.

The goal of this preconference workshop is to stimulate interest in stress regulation of cancer biology as a fertile research field for intellectual investment. The Basic and Biobehavioral Research Branch at the National Cancer Institute is committed to increasing the number of scientists conducting research that elucidates the biological and behavioral mechanisms that undergird the interaction of mind, brain, body, and social context and contribute to the pathogenesis, course, and treatment of cancer. The target audience is established and young scientists trained to conduct mechanistically focused biobehavioral and health psychology research. The workshop will feature didactic lectures by prominent cancer and biobehavioral researchers, a networking lunch, and small roundtable discussions of mechanisms and pathways and cancer types. If there is interest, opportunities will be available for expert consultation and one-on-one mentoring by workshop faculty.

Didactic modules will include:

- The biology of cancer, including an overview of cancer initiation, progression, invasion, and metastasis cascade;
- Six hallmarks of cancer;
- Biobehavioral mediators and pathways
- Cancer relevant biological pathways most susceptible to social/psychological antecedents;
- Specific cancers and tumor types most relevant to social/psychological influences;
- Hormonal regulation of cancer gene expression;
- Epigenetics and cancer susceptibility; and
- Neuroendocrine regulation of ovarian cancer growth and progression as a research exemplar.

12:30 - 4:30 pm
Half-Day Workshop

APS Mini-Medical School: Overview of Biomedical Pathophysiology Relevant to Stress and Disease

Developed by the Professional Education Committee

Co-Chairs: Jason Satterfield, PhD and Daichi Shimbo, MD; *Faculty:* Margaret Kemeny, PhD; Jeanne McCaffery, PhD; Jason Satterfield, PhD and Daichi Shimbo, MD

The educational aim of this workshop is to educate and inform graduate students and scientists (both early career and senior) by providing an up-to-date review of the basic biobehavioral mechanisms underlying stress-related diseases. Both basic biological mechanisms and “big picture” relevance to human health and psychological stress will be emphasized. Mastery of basic workshop content is intended to enrich comprehension and appreciation of more in depth presentations during the APS conference and to create collaborative bridges between research “silos.”

The workshop will begin with an overview of current medical training, the major biomedical disciplines involved, a broad review of systems or diseases that are related to stress, and an introduction of the focused didactics. Medical scientists will then give a 35-40 minute evidence-based presentation in one of four areas relevant to stress and disease. Each talk will be followed by a 10-minute question and answer period.

After the focused Q&A for the final speaker, there will be a 20-minute question and answer session, involving all four speakers, be moderated by the session chairs. This moderated session will allow participants to ask cross-cutting questions and explore how various mechanisms in stress may inter-related. Speakers and moderators will make explicit links to upcoming sessions during the APS conference.

AGENDA

Overview

Speakers: Jason Satterfield, PhD and Daichi Shimbo, MD

Overview of medical paradigms and ways of thinking; primary disciplines, diseases, and mechanisms relevant to the study of stress, disease, and health.

Stress Physiology: Overview and Updates

Speaker: Kristen Salomon, PhD

Focus of this talk will be on 2 basic psychological stress pathways - the HPA axis and autonomic nervous system. Functional neuroanatomy, pathophysiology, biochemistry, and pharmacology will be reviewed. Core mediators, moderators, associated measurement instruments, and relevant health outcomes will be included. Basic examples of neuroendocrine and autonomic dysregulation will illustrate conceptual applications and possible therapeutic targets.

Biological Stress-related Mechanisms Specific to the Onset of the Acute Coronary Syndromes and Sudden Cardiac Death

Speaker: Daichi Shimbo, MD

Brief overview of cardiac anatomy and physiology including key mechanisms and functional outcomes. Mechanisms such as platelet aggregation, coagulation, inflammatory, and endothelial dysfunction will be reviewed, as well as the mechanisms of atherosclerotic plaque formation and

disruption in the onset of the acute coronary syndromes. Further, additional mechanisms specific to sudden cardiac death such as arrhythmias will also be reviewed.

Gene-Environment Interactions in Stress

Speaker: Jeanne McCaffery, PhD

A basic overview of genes, genotypes, and phenotypes (at the level of medical school). Epigenetic models of gene-environment interaction will be described. Examples of interactions and models in stress will be reviewed and discussed. How these interactions are assessed methodologically will be reviewed.

The Immune System in Psychoneuroimmunology: Concepts, Measures, and Pathways

Speaker: Margaret Kemeny, PhD

Basics of immunologic functioning, relevant to psychological stress, will be reviewed including cells and tissues of the immune system, innate and adaptive immunity, humoral and cell-mediated immune responses, and the regulatory mechanisms that maintain a balance between activation and inhibition. Psychological stress-related pathophysiology will include coverage of tissue damage, inflammation, hypersensitivity, and autoimmunity.

Workshop conclusion and preview of coming attractions at the APS conference

12:30 - 4:30 pm

Half-Day Workshop

Meditation Research and Psychosomatic Medicine: Evidence for Efficacy, Research Design Challenges and Lessons Learned

Presenters: Margaret A. Chesney, PhD, Osher Center for Integrative Medicine, UCSF, Elizabeth Kimbrough, PhD, University of Maryland School of Medicine, Elizabeth A. Hoge, MD
Harvard Medical School

Special Guest: Linda Carlson, PhD, University of Calgary

An emerging body of research has demonstrated beneficial effects of meditation training in medical and psychiatric patient populations. This half-day workshop is designed for those interested or involved in meditation research. The workshop will start with a review of scientific evidence regarding the effects of meditative training on health outcomes including reducing blood pressure, pain, and psychological distress. There will also be facilitated discussions of methodological issues in meditation research, including the key challenges for research designs such as the selection of appropriate control groups and the measurement of physiological effects. The latter discussion will address neuroimaging, psychophysiological testing, and biomarkers including hormone and immune parameters. The focus of the workshop will be interactive, involving the attendees in the discussion. A special feature will be a brief “data-blitz” during which interested attendees will be encouraged to share a power-point slide summarizing their research findings and lessons learned.