Members

Scientific Steering Committee

Linda Alexander, PhD
Associate Professor of
Health Behavior
University of Kentucky
College of Public Health

Steven W. Cole, PhD
Professor of Medicine and
Psychiatry and Biobehavioral
Sciences
David Geffen
School of Medicine
University of California,
Los Angeles

Paige A. Green, PhD, MPH
Chief, Basic Biobehavioral and
Psychological Sciences Branch
National Cancer Institute

Susan K. Lutgendorf, PhD
Professor, Departments of
Psychology, Obstetrics and
Gynecology, and Urology
University of Iowa

Anil K. Sood, MD
Professor, Vice Chair
Translational Research
in the Departments of
Gynecologic Oncology and
Reproductive Medicine
M.D. Anderson Cancer Center

NBBPC members:

1. Foster the discovery-to-translation continuum of research related to biobehavioral pathways in cancer;
2. Focus on unmet, understudied, highly exploratory questions that can't yet be addressed through the submission of a research project grant application to NCI; and
3. Develop and conduct proof of concept/principal/feasibility studies in support of the near-term submission of research project grant applications to NCI.

Michael H. Antoni, PhD
Shamgar Ben-Eliyahu, PhD
Nathan A. Berger, MD
Julienne Bower, PhD
Erin Costanzo, PhD
Naomi Eisenberger, PhD
Wenwei Hu, PhD
Jennifer M. Knight, MD
Don Lamkin, PhD
Kelley S. Madden, PhD
Tor Wager, PhD

For inquiries about the Network mission and scientific scope, contact:
Paige Green, National Cancer Institute
240-276-6899 | greenpa@nih.gov

For inquiries about the funding schedule, contact:
Alex Konev, Leidos Biomedical Research, Inc.
301-228-4323 | alex.konev@nih.gov

Network Priorities

- Stimulate novel scientific concepts and paradigms
- Foster innovative collaborations between diverse disciplines
- Disseminate relevant discoveries through major scientific conferences and meetings
- Accelerate the translation of discoveries to patient benefit
- Synthesize the state of the science, analyze secondary data, and publish
- Encourage established scientists to apply their expertise to this emerging area of research
- Cultivate the education, training, and professional advancement of early career scientists

Learn more and view upcoming RFP opportunities at: http://cancercontrol.cancer.gov/brp/bbpsb/ncintwk-biopthwys.html

National Cancer Institute

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health

NATIONAL CANCER INSTITUTE

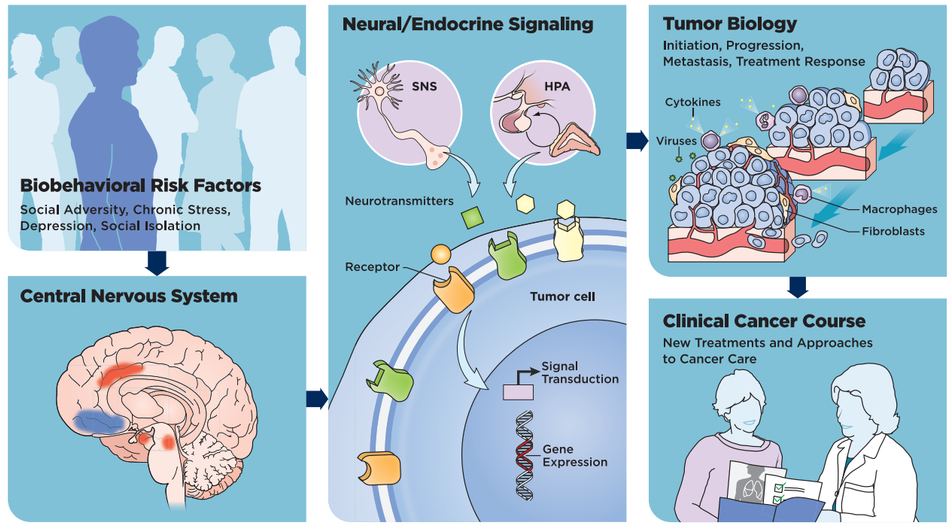
NETWORK ON BIOBEHAVIORAL PATHWAYS IN CANCER

The National Cancer Institute Network on Biobehavioral Pathways in Cancer (NBBPC) accelerates the translation and communication of biobehavioral discoveries to advance clinical cancer care.

NBBPC is a consortium designed to support knowledge of the molecular and signaling pathways that link psychological, behavioral, and social factors to cancer biology and apply that knowledge toward the development of efficacious interventions to reduce cancer risk and improve clinical outcomes. NBBPC has specific interest in proof-of-concept basic and translational studies to control disease in cancer patients, prevent recurrence post-treatment, and augment disease-free survival.

The Network seeds proposals for small-scale pilot projects to advance the knowledge of molecular pathways that link psychological, behavioral, or social factors to cancer biology. These projects inform further research opportunities to develop effective interventions and improve clinical outcomes.

Biobehavioral Pathways in Cancer



Heuristic framework for research on the influences of biobehavioral risk factors on clinical cancer course.
Green McDonald, P., O'Connell, M., & Lutgendorf, S.K. (2013).
Psychoneuroimmunology and cancer: A decade of discovery, paradigm shifts, and methodological innovations.
Brain, Behavior, and Immunity. 30(0):S1-S9.

Network Pilot Projects 2013–2015

Funded by the National Cancer Institute (NCI)
Contract No. HHSN261200800001E

Pilot Project Descriptions

Effects of Cognitive Behavioral Stress Management Intervention on Clinical Disease Endpoints in Women with Breast Cancer — 1

Michael H. Antoni, PhD, University of Miami

This project consists of extensive follow-up of a randomized, controlled trial, which aims to test the effects of group-based cognitive behavioral stress management intervention versus psychoeducational control on clinical disease endpoints over an extended time in women initially treated for non-metastatic breast cancer. It examines whether specific biobehavioral and psychological adaptation processes modified by the intervention in the first year of medical treatment predict differences in clinical endpoints (e.g., survival and recurrence) up to 13 years later.

Perioperative Use of Beta-blocker and COX2 Inhibitor — 2

Shamgar Ben-Eliyahu, PhD, Tel Aviv University

This project uses multicenter randomization to assess the short-term effects of counteracting excess perioperative catecholamine and prostaglandin levels on immune, endocrine, and pro-metastatic serum and histological indices. Results of this project will be used to develop a large-scale clinical trial.

Behavioral Pathways in Stem Cell Transplantation: CD14+ Gene Expression — 3

Erin Costanzo, PhD, University of Wisconsin, Madison

This project examines gene expression patterns of CD14+ cells as a potential pathway by which stress-related psychosocial factors may influence immune recovery and clinical outcomes following hematopoietic stem cell transplantation (HSCT). The study focuses on multiple myeloma patients recovering from autologous HSCT, given evidence in this population for the role of CD14+-derived macrophages in immune recovery, as well as in angiogenesis, apoptosis, and production of disease-promoting cytokines in this population.

Neural Substrates of Social Support — 4

Naomi Eisenberger, PhD, University of California, Los Angeles

This project produced a white paper that served as the basis for the fMRI probe optimization study. The paper provides a literature review of fMRI-based research on behavioral probe paradigms and empirical neural activity correlates of social support, attachment, affiliation, and related psychological constructs.

See Eisenberger, N. (2013). An Empirical Review of the Neural Underpinnings of Receiving and Giving Social Support: Implications for Health. Psychosomatic Medicine, 75(6):545–556. http://journals.lww.com/psychosomaticmedicine/Fulltext/2013/07000/An_Empirical_Review_of_the_Neural_Underpinnings_of.6.aspx

fMRI Probe Optimization Study of Social Support — 5

Naomi Eisenberger, PhD, and Julienne Bower, PhD, University of California, Los Angeles

Based on the white paper referenced above, this project aims to identify and pilot test fMRI probe tasks that can help assess whether individual differences in measures of experienced social support (as measured by the Social Provisions Scale-Attachment and the UCLA Loneliness Scale) relate systematically to individual differences in neural activity to the specialized probe tasks. Phase I of the project will be conducted in healthy volunteer subjects.

Stress and Tumorigenesis in Normal and p53 Knockout Models — 6

Wenwei Hu, PhD, Robert Wood Johnson Foundation

This project is investigating the impact of chronic stress on DNA damage accumulation, which, in keeping with the established chronic stress mouse model system, then promotes tumor initiation. Based on the recent finding that chronic stress attenuates the function of p53, a central player in tumor suppression, this project will test whether chronic stress promotes DNA damage and enhances mutation frequency and copy number variation in a largely p53-dependent manner.

Beta-Adrenergic Regulation of Acute Lymphocytic Leukemia — 7

Don Lamkin, PhD, University of California, Los Angeles

This project examines a potential downstream mechanism by which beta-adrenergic signaling accelerates progression of acute lymphoblastic leukemia (ALL). Specifically, an orthotopic mouse model of human leukemia will be used to understand the role of the CXCR4-CXCL12 chemokine system in stress-enhanced ALL progression.

Metabolic Fingerprint of Stress Influences in Cancer — 8

Anil K. Sood, MD, MD Anderson Cancer Center

This project examines unique metabolic signatures in epithelial ovarian cancer tissues from human subjects with different depression and social support profiles. Global biochemical profiles were studied in tissue samples (n=85) from patients who are categorized according to scores on biobehavioral risk factors. Mechanistic and biological studies to examine the regulation of metabolic pathways in the context of chronic stress effects on the tumor microenvironment were also conducted.

Interactive Wiki Page — 9

Tor Wager, PhD, University of Colorado, Boulder

This project provides a targeted literature review of fMRI-based research on brain stem control of sympathetic nervous system (SNS) activity, and its regulation by higher brain (e.g., cortical) regions. The interactive wiki page (http://brainstemwiki.colorado.edu) identifies cortical and sub-cortical brain regions of interest and the relevant fMRI probe paradigm tasks suitable for use in subsequent studies relating social support to SNS activation.

Biobehavioral Benefits of Mixed Gender Housing on Survival of Mice with Colon Neoplasia — 10

Nathan A. Berger, MD, Case Western Reserve University

To determine mechanisms and provide potential targets for design and implementation of biobehavioral interventions in cancer patients and survivors, this project examines the effect of (1) mixed gender housing, (2) same gender housing, and (3) social isolation on survival and changes in circulating hormones, cytokines, and other mediators and biomarkers in C57BL6J mice bearing the APC^{Min} mutation predisposing to gastrointestinal neoplasia.

Dual Psychosocial Stressor Exposure and Spontaneous Breast Tumor Metastasis in MMTV-PyMT Mice: Does Dual Stressor Exposure Increase Metastasis by Regulating Circulating Exosomes and Tumor Extracellular Matrix? — 11

Kelley S. Madden, PhD, University of Rochester

This project will establish how exposure to a dual stressor is linked to metastasis in MMTV-PyMT mice, a spontaneous breast cancer model that mimics metastatic breast cancer in humans. The stressor, a combination of chronic psychological stress (social isolation) and acute restraint stress, may mimic the complex stressors experienced by cancer patients. This project examines distinct and novel biological mechanisms underlying stress exposure: (1) circulating exosomes, a newly defined metastatic mechanism, and (2) alterations in the tumor extracellular matrix.

Using Propranolol to Decrease Gene Expression of Stress-Mediated Beta-Adrenergic Pathways in Hematopoietic Stem Cell Transplant Recipients — 12

Jennifer M. Knight, MD, Medical College of Wisconsin

This project assesses whether gene expression of beta-adrenergic signaling pathways can be altered in individuals undergoing HSCT for multiple myeloma by administering a daily beta-blocker (propranolol). This is the first human trial of a beta-blocker to improve cancer control by pharmacologically intervening in biobehaviorally mediated gene expression. The goal is to leverage these findings for a larger, randomized controlled trial that evaluates clinical outcomes.

Learn more and view upcoming RFP opportunities at: http://cancercontrol.cancer.gov/brp/bbpsb/ncintwk-biopthwys.html