



Era of Hope
Department of Defense
Breast Cancer Research Program Meeting

PROCEEDINGS

June 8–11, 2005
Pennsylvania Convention Center
Philadelphia, Pennsylvania



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
US ARMY MEDICAL RESEARCH AND MATERIEL COMMAND
504 SCOTT STREET
FORT DETRICK, MD 21702-5012

APR 29 2005

Office of the Acting Commander

Dear Colleagues:

Welcome to the Department of Defense (DOD) Breast Cancer Research Program (BCRP) 2005 Era of Hope meeting. This gathering represents the collaborative endeavor of many people to affect breast cancer's impact on the lives of all who are touched by it. The 2005 meeting highlights the multidisciplinary and innovative research that the DOD BCRP has funded in our efforts to eradicate breast cancer.

This collaboration among the research community, breast cancer consumers, and the US Government is the result of the hard work initiated and sustained by survivors and advocates, the decision of Congress to continue funding, and the dedication of scientists and clinicians to the program. The 2005 Era of Hope Meeting, a hallmark of the DOD BCRP, demonstrates the commitment of the US Army Medical Research and Materiel Command to manage the DOD BCRP in a manner responsive to the vision and equal to the dedication of all our partners.

The 2005 Era of Hope meeting builds on this collaboration by addressing the broad question, "Where are we in the conquest of breast cancer?" To facilitate communication and encourage greater interaction among the many diverse disciplines in attendance, the meeting is organized around three unifying themes: Understanding Risk – A Different Perspective; Understanding Who Needs Intervention; and Understanding Treatments – Effectively Treating Primary and Metastatic Disease. All BCRP award recipients from fiscal years 2001-2003 were invited to present their research findings and exchange ideas at this meeting. Also, many award recipients from previous fiscal years (1992-2000) were invited to provide updates on advancements in their research. Breast cancer consumers, who have been integral to the success of the DOD BCRP since its inception, are serving side-by-side with the scientists as co-chairs and participants in all sessions.

My staff and I thank you for your continuing partnership in our efforts to eliminate this disease, sustain health, and improve the quality of life for those living with breast cancer.

Sincerely,

James A. Romano, Jr.
Colonel, Medical Service Corps
Acting Commander



DEPARTMENT OF THE ARMY
US ARMY MEDICAL RESEARCH AND MATERIEL COMMAND
1077 PATCHEL STREET
FORT DETRICK MD 21702-5024

REPLY TO
ATTENTION OF

June 8, 2005

Congressionally Directed Medical Research Programs

Dear Colleagues:

Era of Hope 2005 is the fourth meeting of the US Department of Defense (DOD) Breast Cancer Research Program (BCRP). The DOD BCRP is a leader in funding innovative, multidisciplinary, breast cancer research that explores new avenues, addresses neglected issues, and brings new investigators into the field. The scientific excellence and innovation of the research presented at this *Era of Hope* meeting testifies to the many talented, creative scientists and clinical researchers supported by the DOD BCRP.

The DOD BCRP was created in response to the concerns of those directly affected by breast cancer. Breast cancer survivors and advocates have had a tremendous impact on this program by their participation in program vision setting and proposal review. Collaboration among breast cancer survivors, research advocates, scientists, clinicians, and the federal government is one of the DOD BCRP's most important achievements. The success of this partnership is due to the shared dedication and commitment to eradicate breast cancer. I extend my deepest gratitude to the following DOD BCRP participants:

- Breast cancer survivors and advocates, whose courage and commitment created this program, and whose passion, inspiration, and vision of eradicating breast cancer continue to infuse it.
- The scientists and clinicians funded by the program who, through their research, provide hope for finding a cure.
- Members of the Integration Panel, present and past, who craft a responsive, dynamic, and comprehensive program every year through fiscally responsible investment strategies, creating award mechanisms to support these strategies, and identifying the research that will most effectively move us closer to a cure.
- Members of the DOD BCRP peer review panels who have met the challenge of reviewing over 25,000 proposals during the past 13 years. Their expertise and perseverance has assisted us in finding and funding the best science.
- Members of the DOD, the US Army Medical Research and Materiel Command, the BCRP Program Management Team, and support staff, whose energy, enthusiasm, and diligence sustain the DOD BCRP.

The strength, skill, vision, and devotion of all these dedicated individuals have created a research program that forges new pathways toward eradicating breast cancer. This fourth *Era of Hope* meeting is the culmination of 13 years of progress of the DOD BCRP in the fight against breast cancer. I thank you for your participation.

Sincerely,

Janet R. Harris

Janet R. Harris, RN, PhD
Colonel, US Army Nurse Corps
Director

TABLE OF CONTENTS

Foreword.....	i
Letter from the Acting Commander.....	v
Letter from the Director	vi

Poster Session Number and Title	Page
P1 – Oncogenes	1
P2 – Signal Transduction I.....	9
P3 – Mammary Gland Development	17
P4 – DNA Damage and Repair	27
P5 – Transcription, Translation, and Modification	35
P6 – Genomics and Proteomics	43
P7 – Hormone Receptors I	53
P8 – Endocrine Carcinogenesis.....	61
P9 – Angiogenesis	65
P10 – Invasion and Metastasis I.....	73
P11 – Tumor Progression.....	81
P12 – Tumor Immunology.....	91
P13 – Biomarkers I	97
P14 – Computer-Aided Diagnostics	105
P15 – Nuclear Medicine Imaging	113
P16 – Drug Design and Development I	119
P17 – Radiotherapy.....	129
P18 – Hormonal Therapy	135
P19 – Antiangiogenics	139
P20 – Symptom Management	143
P21 – Evolving Therapeutic Targets.....	151
P22 – Complementary Health and Alternative Medicine	155
P23 – Behavioral Sciences and Decision Making.....	159
P24 – Environmental Epidemiology	169
P25 – BRCA2 Tumor Suppressor	175
P26 – EGF Superfamily I.....	179
P27 – p53	187
P28 – TGF- β	193
P29 – Cell Cycle	197
P30 – Tumor Suppressor Genes I	205
P31 – Signal Transduction II	215
P32 – Functional Study of Biological Molecules I	225
P33 – Tyrosine Kinase Signaling.....	233
P34 – Hormone Metabolism	237
P35 – Hormone Receptors II	241
P36 – Mechanism of Hormone Action.....	249
P37 – Chemical/Physical Carcinogenesis	255
P38 – Invasion and Metastasis II	259
P39 – Regulation of the Immune Response	269
P40 – Biomarkers II	275
P41 – Digital Imaging	283
P42 – X-Ray Imaging	287
P43 – Drug Design and Development II	293
P44 – Targeted Therapies I	301
P45 – Vaccines and Immunotherapies	309
P46 – Gene Therapy.....	317
P47 – Photodynamic Therapy	323
P48 – Clinical and Surgical Management of Breast Cancer	327
P49 – Genetic Epidemiology	333
P50 – Breast Cancer Centers of Excellence	341

P51 – BRCA1 Tumor Suppressor	349
P52 – EGF Superfamily II	359
P53 – Growth Factors/Cytokines	367
P54 – Tumor Suppressor Genes II	373
P55 – Functional Study of Biological Molecules II	381
P56 – Genomic Instability	389
P57 – Familial and Hereditary Carcinogenesis	399
P58 – Apoptosis	403
P59 – Stromal-Epithelial Interactions	409
P60 – Invasion and Metastasis III	419
P61 – Nutrition and Neutraceuticals	427
P62 – Risk and Prevention	433
P63 – Magnetic Resonance Imaging	441
P64 – Novel Imaging	445
P65 – Agent Development	459
P66 – Drug Resistance	465
P67 – Targeted Therapies II	473
P68 – Health Care Delivery	481
P69 – Quality of Life	485
P70 – Surveillance and Descriptive Epidemiology	491
P71 – Summer Undergraduate Training Programs	497