Overview
NCI Diversity Training Programs

Dr. Sanya A. Springfield
Director
Center to Reduce Cancer Health Disparities

National Cancer Advisory Board
June 22, 2010
Historical Diversity Training Barriers

How could 20 years of funding Diversity Supplements and co-funding “targeted” programs...

...result in a dearth of competitive diverse cancer researchers?

**PIPELINE**
- Low Pool
- Students Deterred
- Low Expectations
- Inadequate Preparation
- Scarcity of Role Models

**PROGRAMS**
- Late Intervention
- Short Term
- Selection Processes
- Lack of Next Steps
- Inadequate Tracking
Increase the size of the talent pool

Emphasize strategic and scientific areas of greatest need

Expand and extend the period of training

High School and Undergraduate
Pre ‐ doctoral
Early Investigator Specialized Supplements
Early Investigator Awards

Continuing Umbrella of Research Experiences
Cancer Center Grant: P30

Diversity Research Supplements

NRSA Fellowships: F31
NRSA Institutional Training Grants: T32
Prevention and Control: R25

SPORE/Translational: P50
Clinical Oncology Training Grants: K12

Career Awards: K01, K08, K23
Transition Career: K22

Continuing
Umbrella
Research
Experiences

HS Undergrad Predoctoral Postdoctoral Junior Investigator
Growth in CURE Mechanisms*

*K01/K08 began in 1997; K23 began in 2000; and K22 began in 2001
*Individuals who are underrepresented, first generation college graduates, from disadvantaged backgrounds, or disability
Diversity/P30 Supplements for High School and Undergraduates

*Types 1 and 5
Pre-doctoral Students (F31s) Growth
Ruth L. Kirschstein NRSA Award

Farmer, Tyesha
A high resolution comparative analysis of early onset breast cancer by race

Nwachkwu, Jerome
Mechanism of ART-27 Function in Prostate Cancer

Brauer, Heather
Identification and validation of Breast Cancer Peptide Markers

Armaiz-Pena, Guillermo
Role of Src in Stress-Mediated Progression of Ovarian Cancer

*Type 1
Pre-doctoral Research by Cancer Type

- **Breast**: 33 (38%)
- **Prostate**: 13 (15%)
- **Leukemia**: 9 (10%)

Total: n=201
Pre-doctoral Publications

Peer Reviewed Publications of F31 Awardees

<table>
<thead>
<tr>
<th>Fiscal Year (FY)</th>
<th>Number of Publications</th>
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<tr>
<td>2006</td>
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<td>2007</td>
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<td>2008</td>
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<td>2009</td>
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F31 (Pre-docs)
Early Stage Specialized Supplements

Awards

Diversity of Awardees

*Types 1 and 5
Early Stage Investigator Research by Cancer Type

- 25 (27%) Breast
- 20 (21%) Lung
- 12 (14%) Colon, Rectum

n=94
CURE Unique Features

- Program Director as Career Navigator and Mentor
- Professional/CURE Development Workshop
- Mentored Peer Review
CURE Program Director

- Diversity of Role Models
- Continual Assessment with Feedback for Growth from HS to R01
- Assist with Cultural Adaptation
- Mentoring Book and Quarterly Newsletter
Professional/Career Development Workshop

Personalized and Culturally-Sensitive Professional/Career Development Workshop

- Interviewing Skills and Publication Skills Building
- Networking with NIH and NCI staff and peers
- Grant Writing
- Research Career Expectations
- Competitive Scientific Poster Session
Mentored Peer Review

Observe Mock Review
Serve on Mock Review
Ad hoc IRG Member
Standing IRG Member
Advisory Committees
# CURE Trainees at Cancer Centers

<table>
<thead>
<tr>
<th>Category</th>
<th>Grant Type</th>
<th>F31</th>
<th>K01</th>
<th>K08</th>
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<td><strong>Junior Investigators Scientists</strong></td>
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<tr>
<td><strong>Junior Investigators Clinicians</strong></td>
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<tr>
<td>CC Awards</td>
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<td>Total</td>
<td>7</td>
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<tr>
<td><strong>Junior Investigators New Basic/Clinical Scientist</strong></td>
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<td><strong>Junior Investigators Clinicians</strong></td>
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Minority Institution/Cancer Center Partnership Training

MI/CCP Training, 2001-2008 & 2009

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<th>2001-2008</th>
<th>2009</th>
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<tr>
<td>HS</td>
<td>21</td>
<td>18</td>
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<tr>
<td>Undergrad</td>
<td>338</td>
<td>181</td>
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<tr>
<td>Grad</td>
<td>360</td>
<td>173</td>
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<tr>
<td>Postdoc</td>
<td>85</td>
<td>13</td>
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<tr>
<td>Med Fellows</td>
<td>83</td>
<td>8</td>
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Increase Translational Research Capacity

Dr. Adeyinka Laiyemo (Gastrointestinal cancer) Howard University

Dr. Maribel Tirado (Cancer Immunotherapy) University of Puerto Rico

Dr. Nicolle Martin (Cancer prevention) Morehouse School of Medicine

Dr. Amosy E. M’Koma (Colorectal cancer) Meharry Medical College
AACR/MICR Minority Scholars/Faculty

3rd AACR Conference
The Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved
September 30 - October 3, 2010
Miami, FL

Faculty Scholars and Students supported to attend and present scientific presentations at annual AACR and other conferences

Number of Faculty Scholars & Students

864 Minority Scholars/Faculty funded by R13 conference grants to AACR
CURE Impact

Pipeline of diverse cancer investigators and mentors

Over 1700 scientific publications

Over 100 competitive grants

Over 200 Committees with 18,000 days of review service
## Pre-doc and Early Stage Investigator Overall Competitiveness

### Pre-doc and Early Stage Investigator Competitiveness 2005-2010

<table>
<thead>
<tr>
<th></th>
<th>Submitted Applications*</th>
<th>Funded Awards</th>
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<tbody>
<tr>
<td>F31</td>
<td>6</td>
<td>3</td>
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<tr>
<td>K01</td>
<td>208</td>
<td>55</td>
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<tr>
<td>K08</td>
<td>13</td>
<td>5</td>
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<tr>
<td>K22</td>
<td>13</td>
<td>4</td>
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<tr>
<td>K23</td>
<td>94</td>
<td>15</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>334</strong></td>
<td><strong>82 (24.6%)</strong></td>
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# Review and Advisory Members

<table>
<thead>
<tr>
<th>Category</th>
<th>Participants</th>
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<tbody>
<tr>
<td><strong>Mock Review Participation</strong></td>
<td>64</td>
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<tr>
<td><strong>NCI Ad hoc Review Subcommittee</strong></td>
<td>32</td>
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<tr>
<td>Manpower &amp; Training (IRG)</td>
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<tr>
<td><strong>NCI/NIH IRG and CSR Review Committees</strong></td>
<td>28</td>
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<tr>
<td>Subcommittees: F (training), G (education), I (career), J (population and patient-oriented)</td>
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<tr>
<td>NCI Molecular Oncology</td>
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<tr>
<td>SBIR Cancer Imaging</td>
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<tr>
<td>SPORE</td>
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<tr>
<td>Experimental Therapeutics</td>
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<tr>
<td><strong>NCI Advisory/Review Committees:</strong></td>
<td>2</td>
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<tr>
<td>NCI Board of Scientific Counselors</td>
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<tr>
<td>NCI Board of Scientific Advisor</td>
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<tr>
<td><strong>Committees Outside NIH</strong></td>
<td>26</td>
</tr>
<tr>
<td>DoD Breast Cancer Research Program</td>
<td></td>
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<tr>
<td>ASCO Science Committee</td>
<td></td>
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<tr>
<td>Myeloma Research Foundation</td>
<td></td>
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<tr>
<td>AACR Minority in Cancer Research</td>
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NCI Investment in CURE Training and Career Development

![Graph showing the investment in CURE training and career development from 2000 to 2009.](image)
More Meritorious Applications than Awards
CURE Evolution: K to 12 Program

Provide early stimulating, state-of-art, hands-on engagement and exposure to science and careers in cancer research.

- K-12 and Undergraduate
- Pre-doctoral
- Specialized Supplements
- Early Stage Investigator
Emerging Technology ET CURE

- Enhance competitiveness
- Expand ET expertise
- Foster successful careers in Jr. Investigators
Supplements to the CURE:

- Cancer Center Grant: P30

Diversity Research Supplements

- NRSA Fellowships: F31
- NRSA Training Grants: T32
- R25T: Prevention and Control

Continuing

- 54 Applications
  - 15 from CURE (28%)
  - 6 Fundable
    - 3 from CURE (50%)

Umbrella

- P50 Translational Cancer Center: P30 MD/POR
- Clinical Oncology Training Grants: K12
- Career Awards: K01 K08 K23
- Transition Career: K22

CURE

- Postdoctoral
- Junior Investigator

Research

- Undergrad
Building Critical Mass through Training: Cancer Health Disparities Geographic Management Program (GMaP)

Cancer Health Disparities Regional “Hub”

- Community-Based Research: CNP, CPHHD
- Basic Research: MI/CCP, Cancer Centers
- Clinical Research: MB/CCOP, CDRP, PNRP
- Training: MI/CCP, CURE

Coordinating Centers

CORES SERVICES

Prevention | Early Detection | Diagnosis | Treatment | Survival/Quality of Life | End of Life Care

Overcoming Cancer Health Disparities
Building Critical Mass through Training: Global Partnerships

Pathway from integration of research and training through partnership growth and development to the globalization of cancer health disparities reduction.
First CURE Trainees
- Where are they now? -

Elaine Alarid, Ph.D.
R01
Associate Professor of Oncology
University of California, Berkley

Manuel Penichet, M.D., Ph.D.
R01
Associate Professor of Surgery, Microbiology, Immunology, and Molecular Genetics
University of California, Los Angeles

Alex Adjei, M.D., Ph.D.
R01
Senior Vice President of Clinical Research & Chairman of the Department of Medicine
Roswell Park Cancer Institute, Buffalo, NY

Chanita Hughes-Halbert, Ph.D.
R01, R24
Associate Professor, Department of Psychiatry
University of Pennsylvania, Abramson Cancer Center
First CURE Trainees
- Where are they now? -

Eduardo Sotomayor, M.D.
R01
Professor and Chair, Department of Malignant Hematology
H. Lee Moffitt Cancer Center & Research Institute

Marcos Paiva, M.D., Ph.D.
K22
Assistant Professor, Department of Surgery
Physician, Head and Neck Surgery, Johnson Comprehensive Cancer Center
University of California, Los Angeles

Thais Salazar-Mather, Ph.D.
K22
Assistant Professor of Medical Science, Department of Molecular Microbiology and Immunology
University of California, Berkley
NIH Director’s New Innovator Awardees

Levi Garraway M.D., Ph.D.
Mentored Award
K08
Defining Melanoma Therapeutic Avenues by Integrative Functional Genomics

Dorothy Sipkins, M.D., Ph.D.
Mentored Award
K08
Stem Cell, Tumor and Bone Marrow Microenvironment Cross-Talk in Vivo
Recent Junior Investigator R01s

**Jennie L. Williams, Ph.D.**
Mentored Award to R01
Current K01 to R01
Phosphosulindac, Mirnas and Cancer Racial Disparity

**Roberto Benzo, M.D.**
Mentored Award
K23 to R01
Pulmonary Rehabilitation Before Lung Cancer Resection

**Martina Buck, M.D., Ph.D.**
Mentored Award
K22 to R01
ARRA Challenge Grant
C/EBP beta peptides for the Treatment of Hepatic Fibrosis

**Christopher Li M.D., Ph.D.**
Mentored Award
K01 to 3 R01s
Depo-Provera And Breast Cancer: Epidemiology/PathologyProtein Biomarkers Of Cancer Risk In Older Persons Risk Factors For Second Primary Breast Cancer Among DCIS Survivors
CURE Noteworthy Promotions

Maria Elena Martinez, Ph.D.
K01, P30 Subproject

Richard H. Hollen Professor of Cancer Research
Co-Director, Cancer Prevention & Control Program
Director, Cancer Health Disparities Institute
Professor of Epidemiology

NCI Board of Scientific Advisors (BSA) Nominee
Chair, Minority in Cancer Research, AACR

Arizona Cancer Center

Miguel Villalona-Calero, M.D.
K01, R21, R01

Director, Division of Medical Oncology,
Department of Internal Medicine

Recognized in Experimental and Lung Cancer

Ohio State University Comprehensive Cancer Center
CURE Intramural/Extramural Investigators

Federico Bernal, Ph.D.
2004-2007 – Ruth L. Kirschstein National Research Service Award (F32)
2008-2011 – Career Transition Award (K22)

*Investigator, Metabolism Branch, Center for Cancer Research*
*National Cancer Institute*

Rafael Casellas, Ph.D.
NCI Mentored Career Development Award to Promote Diversity (K01)

*Adjunct Investigator, Center for Cancer Research*
*National Cancer Institute*
*Investigator, Molecular Immunology Branch, NIAMS*

John Ojeifo, M.D., Ph.D., M.B.A.
R01

*Health Science Administrator, Center to Reduce Cancer Health Disparities*
*National Cancer Institute*
Dedication to Bobby Rosenfeld
Questions for Discussion

How do we incentivize the system in order to prevent losing a generation of potential future trainees during this period of flat budgets and fiscal constraints?

How do we continue to attract the “best and brightest” trainees from diverse backgrounds and retain them in the cancer research enterprise given the current restrictions (e.g. salary cap, R&D, indirect costs) in the career development program?

How should we promote and train the next generation of scientists from diverse backgrounds to engage in multidisciplinary collaborations and team science?
Extra Slides
## CRCHD Compared to NCI Funding for Training

<table>
<thead>
<tr>
<th>Year</th>
<th>NCI (in Thousands)</th>
<th>CRCHD/CMBB (in Thousands)</th>
<th>% of NCI Funding</th>
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<tbody>
<tr>
<td>2001</td>
<td>29773</td>
<td>25600</td>
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<td>2002</td>
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