Approaches to Demonstrate Scientific Impact
Background of Session

• CCSG - Impact, Impact, Impact
• Such as ... Clinical practice, disparities, FDA approval, etc.
• How have centers successfully communicated impact in recent site visits?
• CCAF-IT workshop
Panelists

Marion S. Dorer
Fred Hutchinson Cancer Research Center
(science and translation)

Ira S. Goodman
UCSD Moores Comprehensive Cancer Center
(catchment area)

David M. Gosky
University of Kentucky Markey Cancer Center
(catchment area)

Sharon Mias
Tisch Cancer Institute at Mount Sinai
(catchment area)

Christine Scarcello, MBA
The James Ohio State University Comprehensive Cancer Center
(clinical practice/screening)

Brian C. Springer, MHA
Moffitt Cancer Center
(moderation)
Fred Hutch/University of Washington Cancer Consortium

575 Consortium members

425 Therapeutic Clinical Trials
15% patients on trial

$458M (direct)
FY15 project funding
Global Oncology

- Utilize our unique international partnerships in Africa, China and with the Institute of Health Metrics to reduce the global burden of cancer through translational research on infection- and HIV-related malignancies.

Original NCI field station at the Uganda Cancer Center
Global Oncology

• **Major Accomplishments:**
  – ~$10M FHCRC investment in Kampala site; new clinical and training facility
  – Established Consortium Global Oncology Program (Casper)
  – Global Burden of Disease Study (Murray, IHME)
  – Ugandan Fellows Program

• **Goals:**
  – Recruit pediatric oncologist and genomics faculty
  – Establish Burkitt’s Lymphoma Network
  – Use Global Burden of Disease data to inform clinical and translational studies at international sites
  – Apply insights in low-resource settings to problems in the catchment area, including virus associated cancers and breast cancer screening

**Value of the Cancer Center**

**Shared Resources**
- Genomics
- Biostatistics
- Clinical Research Support

**NWBioTrust**
- Immune Monitoring
- Therapeutic Manufacturing

**Pilot Grants**
- Warren/Casper/Matsen
- Bhatia/Ngheim
Immunotherapy

Develop genetically engineered T cells into a licensed platform for the treatment of select hematologic as well as solid tumors (lung, ovarian, pancreatic cancer)
Immunotherapy

• Major Accomplishments:
  – Promising Phase I results using T-cells engineered with CARs and high-affinity TCRs for hematologic cancers (Riddell, Greenberg, Jensen, *Immunology and Vaccine Development*)
  – Novel methods to map entire T-cell repertoire; spin off Adaptive Technologies (Robins, *Biostatistics and Computational Biology*)
  – New shared resources, faculty recruits; $40M raised
  – Launched Juno Therapeutics, Inc.

• Goals:
  – Refine T cells to overcome checkpoint inhibition
  – Build program in antigen target discovery
  – Recruit clinical trialists and immunologists; pediatric oncologists

Value of the Cancer Center

<table>
<thead>
<tr>
<th>Shared Resources</th>
<th>Comparative Medicine</th>
<th>Pilot Grants</th>
<th>Recruits:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Therapeutic Manufacturing</td>
<td>Cellular Imaging</td>
<td>Hingorani/Greenberg</td>
<td>3 CCSG</td>
</tr>
<tr>
<td>Immune Monitoring</td>
<td>Biostatistics</td>
<td>Scharenberg/Jensen</td>
<td>Funded</td>
</tr>
<tr>
<td></td>
<td>Clinical Research Support</td>
<td>Press/Zhang</td>
<td></td>
</tr>
</tbody>
</table>
## Advancing Research Through the Translational Pipeline

<table>
<thead>
<tr>
<th>Lead Investigators</th>
<th>Local Innovation</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fred Appelbaum, Ollie Press, John Pagel</td>
<td>anti-CD45, I-131 labeled radioantibody</td>
<td>Randomized Phase III study in older AML patients (licensure)</td>
</tr>
<tr>
<td>(Heme Malignancies)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jim Olson (Cancer Basic Biology)</td>
<td>Found that retinoids induce apoptosis in medulloblastoma</td>
<td>National Phase III trial (COG) of carboplatin radiosensitization or 13-cis retinoic acid with cisplatin-based chemotherapy</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>Jonathan Bricker (Cancer Epi, Prevention</td>
<td>Application of a novel behavioral intervention (Acceptance and Commitment Therapy - ACT) to smoking cessation to reduce incidence of lung cancer.</td>
<td>Randomized trial of 2500 participants comparing ACT website with Smokefree.gov to demonstrate that ACT has significantly higher smoking cessation rates</td>
</tr>
<tr>
<td>and Control)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irwin Bernstein, Colleen Delaney (Heme</td>
<td>Defined a potential role for Notch signaling in hematopoiesis</td>
<td>Randomized Phase II trial with 5 Cancer Centers of the universal cord blood donor product</td>
</tr>
<tr>
<td>Malignancies)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Research Affecting the Catchment Area of the
UC San Diego Moores Cancer Center

Ira S. Goodman
Associate Director for Administration

Where discoveries are delivered.℠
UC San Diego Moores Cancer Center

- Scott M. Lippman, MD, Cancer Center Director
  Associate Vice Chancellor for Cancer Research and Care
  Associate Dean

- NCI designated cancer center since 1978
- NCI designated comprehensive status since 2001
- NCI designated Consortium Center with San Diego State University since 2014

- Catchment area – San Diego and Imperial counties –
  Population of ~3.3 million
  High poverty (23%) and obesity rates
  35% Hispanic or Latino
Imperial County

- 8th Largest city (1.33M)
- 5th Largest county (3.14M)
- Population = 175K
- Poverty Rate = 23%

Primary MCC Catchment Area

- 35% Hispanic
  (NCI funded studies, e.g., diet, physical activity)

San Diego State University
Federal Hispanic-serving institution, 2012
Catchment Area Research Pipeline

- MCC Catchment Area
- Reducing Cancer Disparities Program
- Consortium Cancer Center
- Research Affecting Catchment Area
UC San Diego Moores Cancer Center

Research Programs

- Cancer Genomes and Networks
- Cancer Biology and Signalizing
- Cancer Prevention
- Reducing Cancer Disparities
- Hematologic Malignancies
- Solid Tumor Therapeutics
Research Impacting Catchment Area

Portfolio of cancer-disparities grants (UCSD and SDSU) including:

• Obesity prevention in children in low-income communities.
• Smoking-cessation programs in minority populations.
• Obesity-related hepatocellular cancer (HCC) and its risk factor nonalcoholic steatohepatitis (NASH).

*California has the highest incidence of HCC in the world, NASH is significantly more prevalent in Hispanics (than non-Hispanic Whites) in San Diego.*

Lab to clinic studies in:

• obesity and inflammation (Park Cell 2010),
• epidemiology (Loomba AJE 2013),
• chemoprevention (e.g., with metformin; Loomba APT 2009),
• novel imaging, investigator-initiated trials and R01-funded NASH imaging.
Research Impacting Catchment Area

Comprehensive Tobacco Control reduces lung cancer mortality

• 25% Reduced lung cancer mortality
  - 1900 fewer lung cancer deaths in catchment area (during review period)
• US-CA gap in mortality parallels per capita consumption of cigarettes

Pierce et al., *CEBP* 2010, *JAMA* 2011

Statewide tobacco control in CA, 1988

2013 AACR Award for Cancer Prevention (Oct 2013)
Catchment Area Impact

David M. Gosky, MA, MBA

Cancer Centers Administrators Forum
April 4, 2016
MCC Timeline

- 1975: McDowell Cancer Network
- 1985: NCI P30 awarded
- 1995: Markey Cancer Center established
- 2000: Roach Building opened
- 2003: KCR established
- 2006: Karpf recruited
- 2009: Evers recruited
- 2013: NCI Designation

- Strategic planning
- Building leadership team
- Targeted recruitment
- New research facilities
- Major investments in scientific programs and shared resources

Lucille P. Markey
VP George H.W. Bush at Dedication
Significant Burden of Cancer in Kentucky

- **1st** in the nation in overall cancer mortality rate
- **1st** in the nation in incidence rate for all cancer sites
  - Lung and bronchus (1st); colon and rectum (1st); larynx (1st); oral cavity and pharynx (1st); kidney and pelvis (2nd); brain (4th); skin (8th); skin melanoma (9th) non-Hodgkin’s lymphoma (10th); cervix (10th); leukemia (10th)

- Cancer incidence and mortality are highest in Appalachia

### Age-adjusted cancer mortality rates, 2008-2012

<table>
<thead>
<tr>
<th></th>
<th>All Cancers</th>
<th>Lung</th>
<th>Colorectal</th>
<th>Larynx</th>
<th>Oral Cavity</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>171.2</td>
<td>47.2</td>
<td>15.5</td>
<td>1.1</td>
<td>2.5</td>
</tr>
<tr>
<td>Kentucky†</td>
<td>204.4</td>
<td>70.9</td>
<td>18.1</td>
<td>1.5</td>
<td>2.8</td>
</tr>
<tr>
<td>Appalachian Kentucky*</td>
<td>225.8</td>
<td>82.7</td>
<td>20.6</td>
<td>1.7</td>
<td>2.9</td>
</tr>
</tbody>
</table>

† p<0.0001 vs U.S. as a whole; * p<0.05 vs non-Appalachian Kentucky. SEER and Kentucky Cancer Registry.
Colorectal Cancer Screening in Kentucky

Source: http://cdc.gov/brfss, August 2015
Colorectal Cancer Incidence in Kentucky

P<0.05; Source: http://www.kcr.uky.edu, January 2015
Cancer Prevention and Control Efforts to Address the Cervical Cancer Burden in KY

- Dr. Schoenberg led a very successful research project testing a faith-based intervention that dramatically increased PAP testing among Appalachian women (R24 MD002757).

- Dr. Dignan has been studying how to improve cervical cancer screening and follow-up using patient navigators (Appalachian Regional Commission CO-17895-14).

- Dr. Tucker is conducting a study of HPV genotypes among women diagnosed with pre-invasive cervical cancer (CDC 200-2013-M-55678).

- Dr. Vanderpool conducted research testing a culturally sensitive intervention program designed to increase HPV vaccination among young women in Appalachian Kentucky (NIH – CCSG supplement).
Cervical Cancer Incidence Rates in Kentucky, 2001-2011

Incidence per 100,000 population

Source: Kentucky Cancer Registry. All rates age-adjusted to the U.S. 2000 Std. Pop.
Research Question: Is IPV associated with delayed screening survival among women in Kentucky?

Design: Population-based prospective cohort study

Methods: KCR recruitment

Current results: n=1,463 (to date)
- Both IPV (37% lifetime) and Partner Interference w/treatment (13%) associated with lower Functional Assessment of Cancer Therapy; all domains

Funding source: R01 CA120606
Shared Resources: Biostatistics; Informatics
Tisch Cancer Institute: Located in Manhattan, New York City
New York State Cancer Centers
“Meet the Neighbors”

Herbert Irving (Columbia)

Roswell Park Cancer Institute (Buffalo, NY)

Cold Spring Harbor Laboratory (Cold Spring Harbor, Long Island, NY)

Tisch Cancer Institute at Mount Sinai

Memorial Sloan-Kettering

New York University
Tisch Cancer Institute (TCI) at Mount Sinai

- In 2014, CCSG application submitted to be 5th NCI-Designated Cancer Center in NYC, and 7th in NY State

- Advised that it was critical to show how we were serving our own unique catchment area (Why does NYC need another NCI cancer center?)

- TCI commissioned a special study on the incidence and mortality of cancer in the specific neighborhoods of our catchment area.

- Special attention taken to incorporate catchment-related information throughout CCSG application and site visit.

- NCI-Designation awarded as of August 2015
Unique Catchment Areas

Central Harlem

East Harlem

Upper East Side

Mount Sinai

Primary Market

Secondary Market
Strategy to highlight catchment area impact at 2015 site visit

**Posters:** Optional for site visit, but we displayed two posters that were related to our unique populations.

**Presentations:** Wherever possible, incorporated a slide that spoke to *catchment-relevant* issues, such as:

- Directly relevant research
- Minority enrollment in trials
- Outreach to community

**Some Examples:** Will go through the following slides quickly. The focus is not on the content, as much as format and placement.
Mission Statement: To advance the field of cancer research, treatment and prevention and to facilitate the availability of these advancements to our communities so as to extend and improve the lives of cancer patients and their families.

Catchment Area Map

Cancers with Increased Incidence

East Harlem
- Hepatocellular cancer
- Lung cancer
- Laryngeal cancer
- Colorectal cancer

Central Harlem
- Hepatocellular cancer
- Lung cancer
- Laryngeal cancer
- Prostate cancer
- Triple negative breast cancer (3X increased incidence in Blacks)

Upper East Side
- Breast cancer
- Melanoma
- Oral cavity cancer
- Thyroid cancer
- Non-Hodgkin’s lymphoma
- Myeloproliferative disorders

Examples of Catchment Area-Specific Research

Cancer Immunology
- Inflammatory signatures in HCC patients
- Novel targeted immunotherapies for HPV-associated oral-pharyngeal cancer
- Epigenetic biomarkers of melanoma progression
- Neoadjuvant intratumoral immune modulators for prostate cancer

Cancer Mechanisms
- Racial disparities in breast cancer
- Obesity, diabetes and abnormal insulin signaling in tumor development
- CHK-1 suppression in head & neck cancer development
- NFIL3 transcriptional repressor in triple-negative breast cancer
- Phase I trials for myeloproliferative neoplasms

Liver Cancer
- Hepatic fibrosis as a risk factor for HCC
- Aberrant signaling pathways in HCC
- HCV taskforce
- Novel clinical trials for patients with HCC

Cancer Prevention & Control
- I-ELCAP: International consortium for spiral CT lung cancer screening
- Cancer risk among WTC responders
- Patient navigation for enhancing CRC screening adherence
- Contribution of insulin resistance to aggressive triple-negative breast cancer

Community Advocacy Committee

Andreine James - Community member, Witness Project - Community
Libina Magier - Hispanic Federation - Community-Based Organization
Theresa Kane - Community member - Witness Project - Cancer survivor, faith-based organization
Ruth Kelly - Community member, Church pastor - Faith-based organization, caregiver
Karen Marlow - General Cancer Resource Association (NYCAR) - Community-based organization
Sierra Monroy - New York City Cancer Control Center - Community-based organization
Dyanne Pagan - American Cancer Society - Advocacy group
Eugene Pettit - American Cancer Society - Community-based organization
Carolee Perkins - American Cancer Society - Community-based organization
Latanya Priege - American Cancer Society - Advocacy group
Melba Reyes - American Cancer Society - Community-based organization

Clinical Trials Accrual

BMT Minority Enrollment

<table>
<thead>
<tr>
<th>Race</th>
<th>African American</th>
<th>Hispanic</th>
<th>Total</th>
<th>Total Minority Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>206</td>
<td>19%</td>
<td>23%</td>
<td>22%</td>
</tr>
<tr>
<td>White</td>
<td>236</td>
<td>21%</td>
<td>21%</td>
<td>54%</td>
</tr>
<tr>
<td>Total</td>
<td>273</td>
<td>19%</td>
<td>21%</td>
<td>76%</td>
</tr>
</tbody>
</table>

Poster
Cancers with Increased Incidence in Catchment Area

Central Harlem
- HCC (Liver)
- Larynx
- Prostate
- TN Breast
- (Obesity/Diabetes)

East Harlem
- HCC (Liver)
- Larynx
- (Obesity/Diabetes)

World Trade Center Program
- All Cancers
- Prostate
- Thyroid

Upper East Side
- Melanoma
- Head & Neck
- NHL
- MPD
Demographics – East Harlem/Central Harlem

**East Harlem**
- Asian: 3%
- White: 7%
- Hispanic: 55%
- Black: 33%

**Central Harlem**
- Asian: 3%
- White: 8%
- Hispanic: 19%
- Other: 3%

**Upper East Side**
- Hispanic: 6%
- Black: 3%
- Asian: 6%
- Other: 2%
- White: 83%

**Poverty**
Percent of residents living below the poverty level

<table>
<thead>
<tr>
<th>Location</th>
<th>Poverty Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Harlem</td>
<td>38%</td>
</tr>
<tr>
<td>Manhattan</td>
<td>20%</td>
</tr>
<tr>
<td>NYC</td>
<td>21%</td>
</tr>
<tr>
<td>Central Harlem</td>
<td>35%</td>
</tr>
<tr>
<td>Manhattan</td>
<td>20%</td>
</tr>
<tr>
<td>NYC</td>
<td>21%</td>
</tr>
<tr>
<td>Upper East Side</td>
<td>7%</td>
</tr>
<tr>
<td>Manhattan</td>
<td>20%</td>
</tr>
<tr>
<td>NYC</td>
<td>21%</td>
</tr>
</tbody>
</table>

*Source: NYC Dept. of Health & Mental Hygiene Community Health Profiles 2006*
Cancer Mortality Rates in Catchment Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate (Sex- and age-standardized rate/100,000)</th>
<th>% Minority</th>
<th>% Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Harlem</td>
<td>210.9</td>
<td>93</td>
<td>38</td>
</tr>
<tr>
<td>Central Harlem</td>
<td>215.5</td>
<td>92</td>
<td>35</td>
</tr>
<tr>
<td>Upper East Side</td>
<td>143.1</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>NYC</td>
<td>156.7</td>
<td>65</td>
<td>21</td>
</tr>
</tbody>
</table>

2007-2011
Research Relevant to Catchment Area

**Cancer Immunology**
- Inflammatory signatures in HCC patients
- Novel targeted immunotherapies for HPV-associated oral-pharyngeal cancer
- Epigenetic biomarkers of melanoma progression
- Neoadjuvant intratumoral immune modulators for prostate cancer

**Cancer Mechanisms**
- Racial disparities in breast cancer
- Obesity, diabetes and abnormal insulin signaling in tumor development
- CHK-1 suppression in head & neck cancer development
- NFIL3 transcriptional repressor in triple-negative breast cancer
- Phase I trials for myeloproliferative neoplasms

**Liver Cancer**
- Hepatic fibrosis as a risk factor for HCC
- Aberrant signaling pathways in HCC
- HCV taskforce
- Novel clinical trials for patients with HCC

**Cancer Prevention & Control**
- I-ELCAP: International consortium for spiral CT lung cancer screening
- Cancer risk among WTC responders
- Patient navigation for enhancing CRC screening adherence
- Contribution of insulin resistance to aggressive triple-negative breast cancer
Liver Cancer - Catchment Area Related Research

Central Harlem
- Liver Cancer

East Harlem
- Liver Cancer

Liver Cancer Mortality Rates in Catchment Area

<table>
<thead>
<tr>
<th>Area</th>
<th>Rate 2009 HCV Incidence (1/100,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Harlem</td>
<td>27.3</td>
</tr>
<tr>
<td>Upper East Side</td>
<td>12.5</td>
</tr>
<tr>
<td>New York City</td>
<td>17.8</td>
</tr>
<tr>
<td>United States</td>
<td>12.4</td>
</tr>
</tbody>
</table>

Age-standardized rate/100,000, 2007-2011
Cancer Mechanisms – Catchment Area Related Research

Central Harlem
- Prostate
- TN Breast
- (Obesity, Diabetes)

East Harlem
- Colorectal
- (Obesity, Diabetes)

World Trade Center Program
- Prostate
- Thyroid

Upper East Side
- Melanoma
- Thyroid
- NHL
- MPD
Cancer Treatment Trial Accruals

Accrual

Minority Subset

2011 2012 2013 2014

Accrual:
- 166 in 2011
- 242 in 2012
- 289 in 2013
- 335 in 2014

Minority Subset:
- 49 in 2011
- 106 in 2012
- 135 in 2013
- 156 in 2014
<table>
<thead>
<tr>
<th></th>
<th>Mount Sinai Cancer Patient Population**</th>
<th>Interventional Therapeutic</th>
<th>Interventional Non-Therapeutic</th>
<th>Non-Interventional Epi, Obs, and Outcome Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RACE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>14.9%</td>
<td>18.8%</td>
<td>25.5%</td>
<td>19.1%</td>
</tr>
<tr>
<td>Asian/Native Hawaiian or Other Pacific Islander</td>
<td>9.5%</td>
<td>13.4%</td>
<td>3.2%</td>
<td>4.6%</td>
</tr>
<tr>
<td><strong>ETHNICITY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>12.5%</td>
<td>17.2%</td>
<td>51.9%</td>
<td>19.1%</td>
</tr>
<tr>
<td><strong>GENDER</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>56.8%</td>
<td>39.3%</td>
<td>53.4%</td>
<td>40.7%</td>
</tr>
</tbody>
</table>
Our responsibility…

2014 Ohio Population: 11.6 million

We are poorer, less educated, and less racially and ethnically diverse than the U.S., on average

Risk Factors in Ohio

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>White</th>
<th>Black</th>
<th>Appalachians</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Tobacco Use, Adults</td>
<td>23%</td>
<td>26%</td>
<td>31%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Hereditary non-polyposis colon cancer-Lynch Syndrome

RED = colon cancer
Research Project 1
Universal Screening for Lynch Syndrome

Albert de la Chapelle
Heather Hampel
Wendy Frankel
Richard Goldberg

Research Project 2
Molecular Epidemiology of Colorectal Cancer

Peter Shields

Research Project 3
Adherence to Colorectal Cancer Screening

Electra Paskett

The James
50 Ohio Hospitals Participating in OCCPI
Including those with highest colorectal cancer volume

- Only samples are sent to Ohio State, not patient
- No cost to the patient or family or hospital
- OSUCCC – James providing all funding (~$4M from PELOTONIA)
- All communication is through physician
- Study is not branded OSU or James
A Legacy of Cancer: The McDaniel Family

- Jay McDaniel was diagnosed at age 48 with colon cancer
- His father James (Mac), pictured left, died at age 63 of colon cancer
- His sister Ruth, pictured right, died at age 56 of brain cancer
A Legacy of Cancer

- Grandfather Jim Ben (colon)
- Father Mac (colon)
- Uncle Jerry (colon)
- Aunt Reba (colon)
Offered Testing to Sister and Three Daughters

Left to Right: Daughter Elizabeth, Jay and Heather Hampel
Cascade Testing

- McDaniel Family Reunion in June 2014
- On Mississippi River in western Kentucky
- Tested 20 at-risk relatives from his dad’s side of the family
- Found one additional branch of family with Lynch Syndrome
- They can now participate in life-saving cancer surveillance
Not only will OCCPI project save lives....

- Both arms of OCCPI are projected to lead to **737** life years saved or a **$36.9M** society benefit

- OCCPI will set the stage for changing national screening guidelines to require testing for Lynch Syndrome
A CANCER-FREE WORLD BEGINS HERE
Discussion