

The City of Hope Intensive  
Course and Clinical Cancer  
Genomics Community of  
Practice: multimodal  
professional development  
for community clinicians

A diagram illustrating Mendel's pea plant experiment. It shows several pea plants with different traits labeled with letters: TT (tall), Tt (tall), tt (short), Ss (smooth), and ss (wrinkled). The plants are arranged in a grid, showing the inheritance of these traits.

# A Team Sport

ISCC, Bethesda, 01/14/16

Jeffrey N. Weitzel, M.D.

&

Kathleen R. Blazer, EdD, CGC  
Associate Director, Cancer  
Genomics Education Program

CLINICAL CANCER GENOMICS  
COMMUNITY OF PRACTICE



City of Hope.



# How have we learned cancer genetics practice in the past?

## “The hard way”

- Self-directed studies
- Hands on experience
- Gleaning the literature
- Formal fellowship training

(Medical Oncology, Clinical Genetics, ? Both)

# City of Hope Division of Clinical Cancer Genetics

## Established in 1996

Dedicated to  
*Standards of Excellence*  
in Cancer Genetics

- Patient Care
- Research
- Education and Training

# Outsmart Cancer

Cancer Screening & Prevention Program<sup>SM</sup>



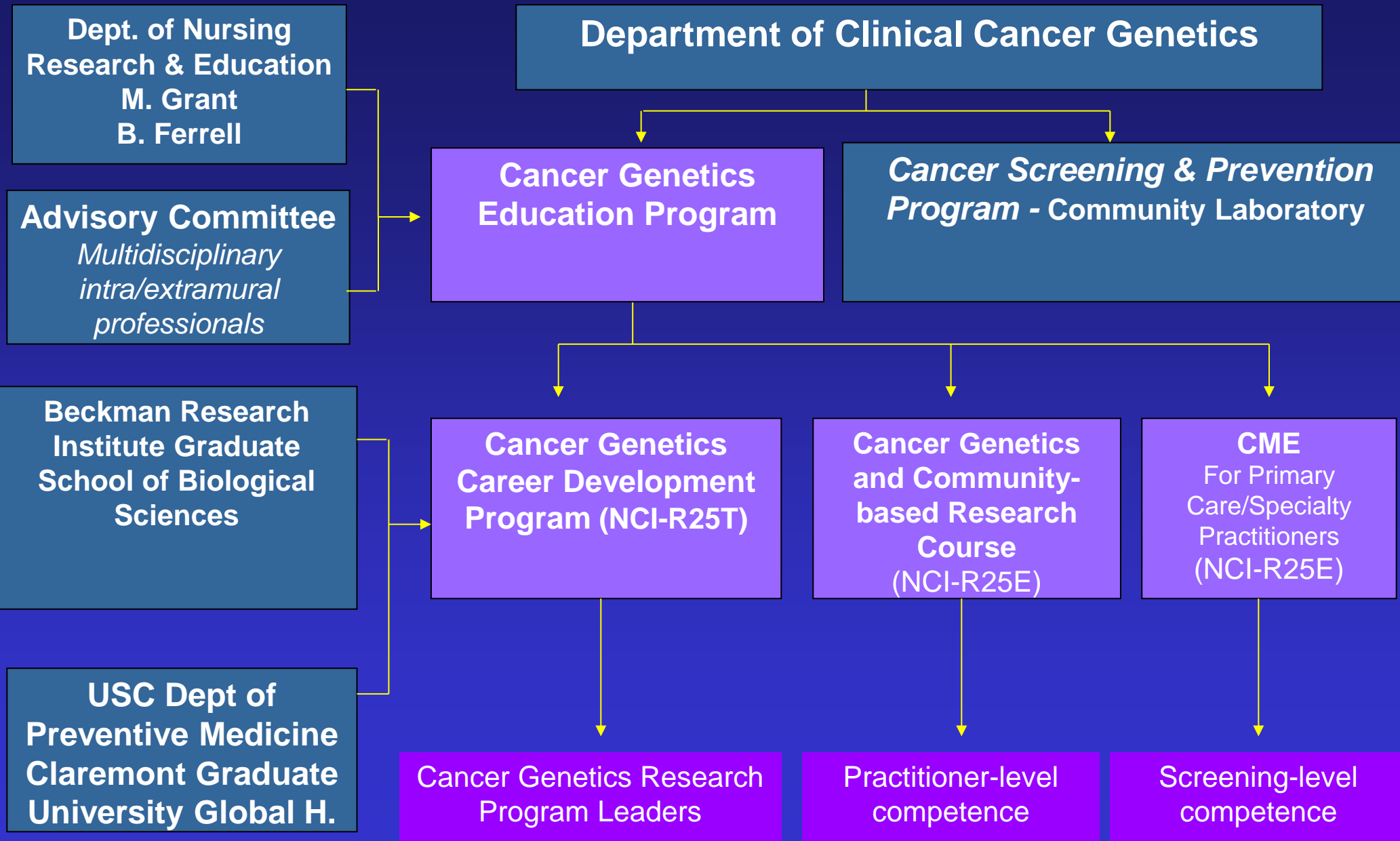


# Funded Educational Initiatives

PI	Grant Number Title	Start and End dates	Target Populations	Number of Participants
Weitzel	Maternal Child Health Bureau-Genetics Services-1MCJ-0161020-01-0 Cancer Genetics Education for Primary Care Providers	1997-2000	Primary care physicians and allied health professionals in managed care organizations, to develop screening and referral level competence	2,800 participants <sup>1, 2</sup>
Weitzel	R25 CA75131 Cancer Genetics Education Program	1998-2007	Cancer center faculty, community oncologists, managed care administrators, underrepresented minority institutions	Full Day Conferences (N=10) <sup>1, 2</sup> 1,423 participants One hour seminars: 22,704 participants
Weitzel Blazer	California CRP#99-86874 R25 CA112486 R25-CA171998-01A1 Intensive Course in Community-based Cancer Risk Counseling and Research	2001-2003 2005-2010 2012-2017	Pilot Intensive Course Community-based physicians, genetic counselors, and master's nurses, to develop practitioner level competence in clinical cancer genetics	532 Participants <sup>3</sup> >150 each: Genetic Counselors; APNs; Physicians Others: PA, PhD/Psych
Weitzel	R25 CA85771 Cancer Genetics Career Development Program	2001-2011	Oncology or genetics clinicians (physicians, genetic counselors, advanced practice nurses) to become translational researchers in cancer genetics	18 Participants <sup>4</sup> 7 Physicians 4 Doctoral nurses 2 Master's level nurses 5 Genetic counselors

1. Blazer, K. R., Grant, M., Sand, S. R., MacDonald, D. J., Choi, J. J., Nedelcu, R. A., & Weitzel, J. N. (2002). *J Cancer Educ*, 17, 69-73.
2. Blazer, K. R., Grant, M., Sand, S. R., MacDonald, D. J., Uman, G. C., & Weitzel, J. N. (2004). *Journal of Medical Genetics*, 41(7), 518-522.
3. Blazer, K. R., MacDonald, D. J., Ricker, C., Sand, S., Uman, G. C., & Weitzel, J. N. (2005). *Genetics in Medicine*, 7(1), 40-47.
4. Blazer, K. R., MacDonald, D. J., Justus, K. A., Grant, M., Azen, S. P., Chamberlain, R. M., Petersen, G. M., King, M., & Weitzel, J., J. *Cancer Educ*.
5. Blazer, K., MacDonald, D., Culver, J. et. al. (2011). Personalized cancer genetics training for personalized medicine. *Genet Med*, 13(9), 832-840.
6. Blazer, K. R., C. Christie, et al. (2012). Impact of Web-based Case Conferencing on Cancer Genetics Training Outcomes for Community-based Clinicians. *Jnl. Cancer Education* 27(2): 217-225.

# Cancer Genetics Education Program Components/Goals



# Cancer Genetics Career Development Program

Initially awarded February 2001 (NCI R25T CA85771) - competing continuation funded through 2011

Purpose: To provide interdisciplinary clinical, didactic and collaborative research training in cancer genetics and prevention

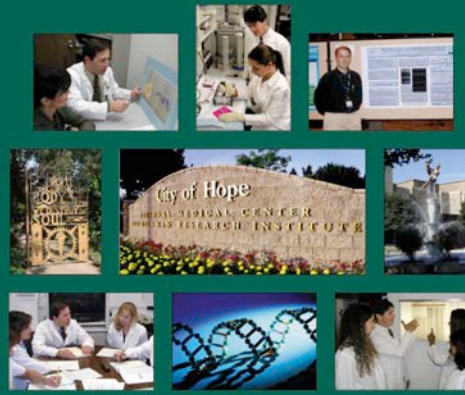
Target Audience: Physicians and doctoral nurses with oncology or genetics credentials and academic career potential

Goal: To develop program leaders in basic, translational and clinical cancer genetics research

City of Hope NCI-designated Comprehensive Cancer Center  
Department of Clinical Cancer Genetics

### Cancer Genetics Fellowship Program


AN INTERDISCIPLINARY PROGRAM IN CANCER GENETICS AND  
CANCER PREVENTION/CONTROL RESEARCH



▼ Menowed Junior Faculty position with a very competitive salary  
▼ Dynamic interface of genetics and oncology  
▼ Goal is to create program leaders in Clinical Cancer Genetics Research  
▼ Rigorous two-year program of broad-spectrum mentored didactic and research training with graduate coursework in clinical cancer genetics, oncology, biostatistics, epidemiology, research methodology and a research project  
▼ Extensive clinical resources through its established prospective Hereditary Cancer Registry and the City of Hope Cancer Screening & Prevention Program  
▼ Research projects from basic science to translational and clinical investigations. Areas of research include:  
• Clinical Trials in Cancer Prevention and High-Risk Surveillance  
• Population Genetics  
• Genetic Epidemiology and Carcinogenesis  
• Basic Molecular Genetics  
• Clinical and Behavioral Outcomes  
• Health Services Research  
• Biomedical Informatics  
• Medical Oncology and Therapeutics Research  
• Pharmacogenetics  
• Molecular Pathology

▼ Multidisciplinary mentorship tailored to the needs and research goals of each fellow  
▼ Protected time for training and development of research projects  
▼ Opportunities for future NCI research support

For more information contact:  
Jeffrey N. Witte  
Department of Clinical Cancer Genetics  
City of Hope NCI-designated Comprehensive Cancer Center  
1500 E. Duarte  
Phone: 626-256-3333  
www.cityofhope.org







CONFERENCE  
Every Wednesday  
Inpatient / Outpatient Room  
8:00 - 10:00 am  
1.5 hour Category 1 Credit  
Moderator  
Lily Liu, MD  
Assistant Professor of Surgery  
Dermatology  
As part of our continuing education, we are required to  
document 10 CME credits for our physicians. We encourage  
you to attend this conference. For more information, please  
contact the Office of Continuing Education at (303) 724-2222.  
We look forward to your participation in this conference.

NEW PATIENT CONFERENCE  
Every Tuesday  
Inpatient / Outpatient Room  
8:00 - 10:00 am  
1.5 hour Category 1 Credit  
Moderator  
Lily Liu, MD  
Assistant Professor of Surgery  
Dermatology  
As part of our continuing education, we are required to  
document 10 CME credits for our physicians. We encourage  
you to attend this conference. For more information, please  
contact the Office of Continuing Education at (303) 724-2222.  
We look forward to your participation in this conference.

Phung Mai  
City of Hope  
PHUNG MAI  
M.D.

Kory J. Anderson  
City of Hope  
KORY  
ANDERSON

Medical forms and documents on the table, including a large sheet with a grid and various text fields.



# Community Cancer Genomics and Research Training

## Objectives

- To train master's-level genetic counselors, advanced practice nurses and physicians for practitioner-level competency in GCRA and research collaboration essentials through an intensive CME/CEU-accredited (>100 hrs) cancer genomics training course
- To increase access to competent GCRA services and promote community-based research participation

# Outcomes from intensive training in genetic cancer risk counseling for clinicians

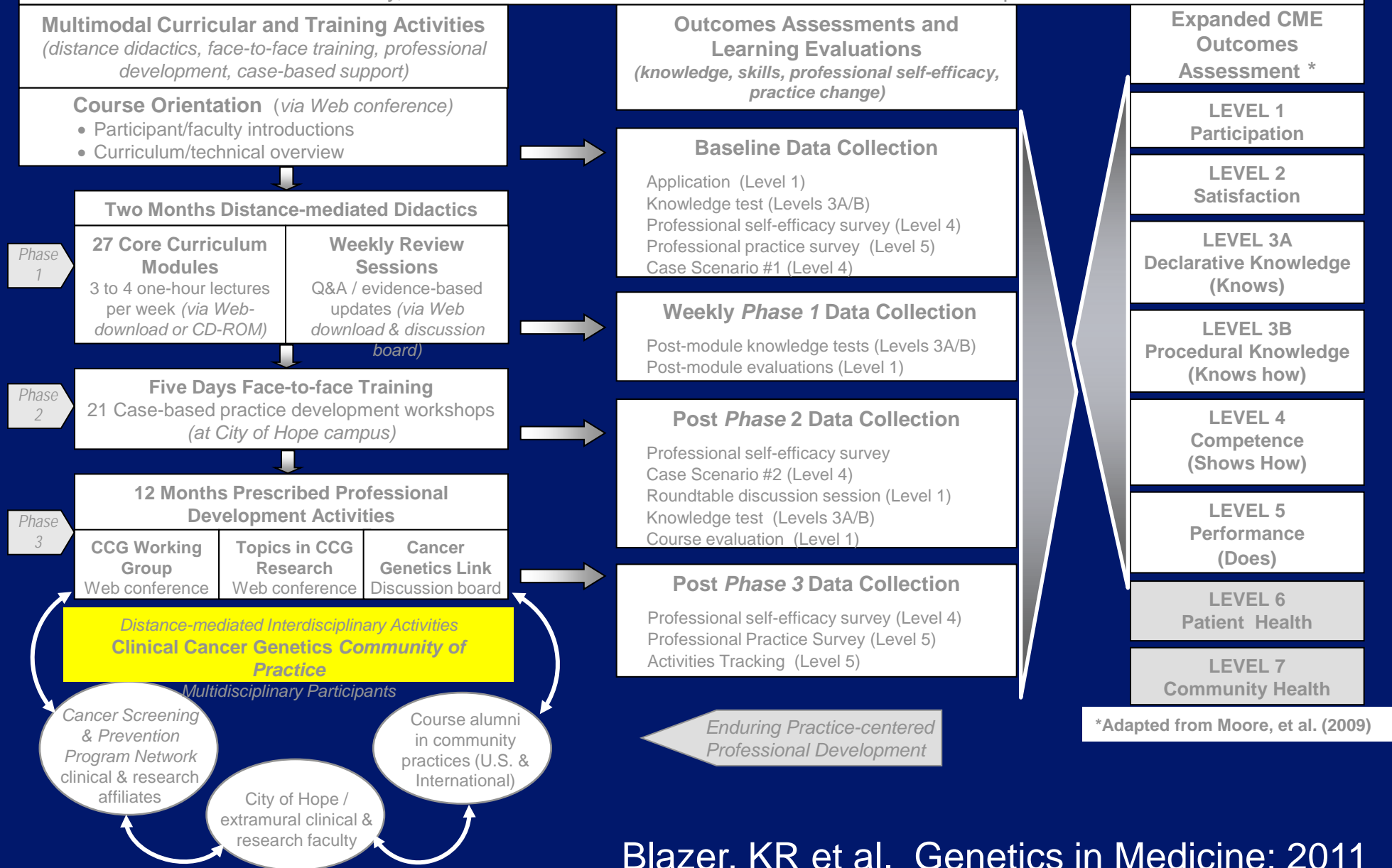
*Kathleen R. Blazer, MS, CGC<sup>1</sup>, Deborah J. MacDonald, RN, MS, APNG<sup>1</sup>, Charite Ricker, MS, CGC<sup>1</sup>, Sharon Sand, CCRP<sup>1-2</sup>, Gwen C. Uman, RN, PhD<sup>2</sup>, and Jeffrey N. Wetzel, MD<sup>1</sup>*

Didactic lectures, case working conferences and all day seminars:

Intensive course topic domains and curriculum models			
Topic domain	Curriculum modules		
Genetics	Basic Genetics	Hereditary cancer syndromes	Hereditary Breast/Ovarian Cancer Syndromes
	The Science of Cancer Genetics		
	Documenting the Family Cancer History		
	Genetic Testing Methods for Inherited Cancer Susceptibilities		
	Molecular Genetics Wet Lab		
	Understanding Variants of Uncertain Significance		
Oncology	Basic Clinical Oncology	Special clinical and educational training and resources	Hereditary Gastro-Intestinal Cancer Syndromes
	Cancer Cytogenetics		
	Staging Schema for Solid Tumors		
	Principles/Toxicities of Cancer Therapy		
Cancer risk counseling skills development/cancer risk assessment	Introduction to Pedigree Drawing	Special clinical and educational training and resources	Hereditary Endocrine Neoplasia Syndromes
	Fundamentals of the Cancer Risk Counseling Session		
	Ethical, Legal, and Social Issues in Cancer Genetics		
	Breast/Ovarian Cancer Risk Assessment		
	Gastro-Intestinal Cancer Risk Assessment		
	Mock Cancer Risk Assessment Counseling Session		
	Practice Counseling Sessions		
	ELSI Workshop and Case Presentations		
	Establishing a Cancer Risk Assessment Clinic		
	Patients' Perspectives		
			Genodermatoses
			Genitourinary Cancer Syndromes
			Pediatric Cancer and Rare Syndromes
			COG Working Group (Interdisciplinary case conference)
			Clinical Breast Exam, Breast Self Exam Course
			Topics in Cancer Genetics Research (Journal Club)
			Genetics Link Web board
			"Advances in Cancer Screening and Prevention: Practical Applications Across the Full Spectrum of Risk"
			"Gastrointestinal Cancer: Critical Advances in Risk Assessment, Screening and Management"
			"Issues in Women's Healthcare: Cancer, Genetics and the Hormone Controversy"

# Intensive Course in Community Cancer Genetics and Research Training Schema

Delivery, Outcomes Assessment and Continued Professional Development





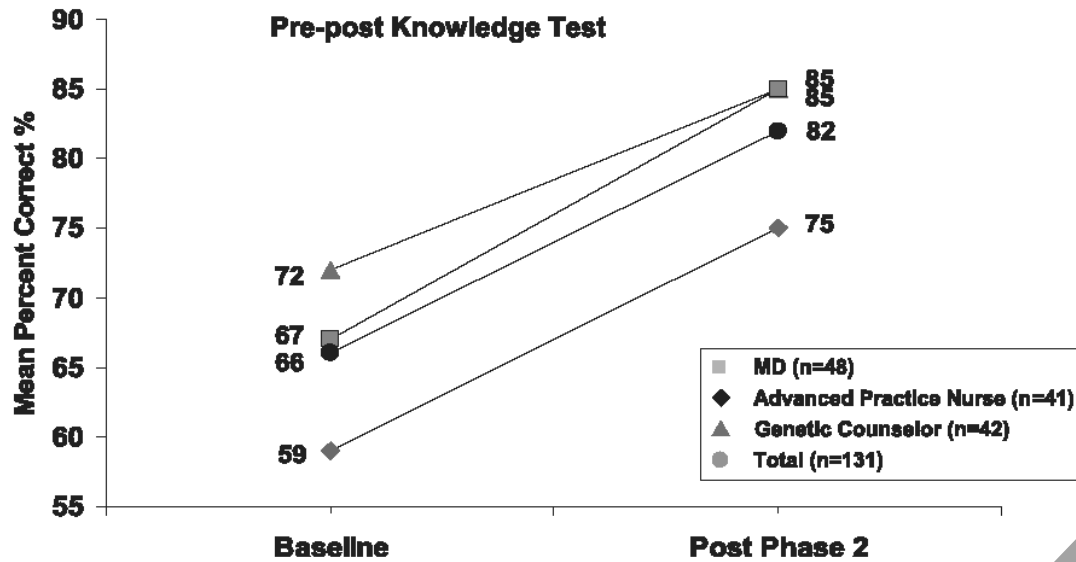
# Intensive Course Outcomes

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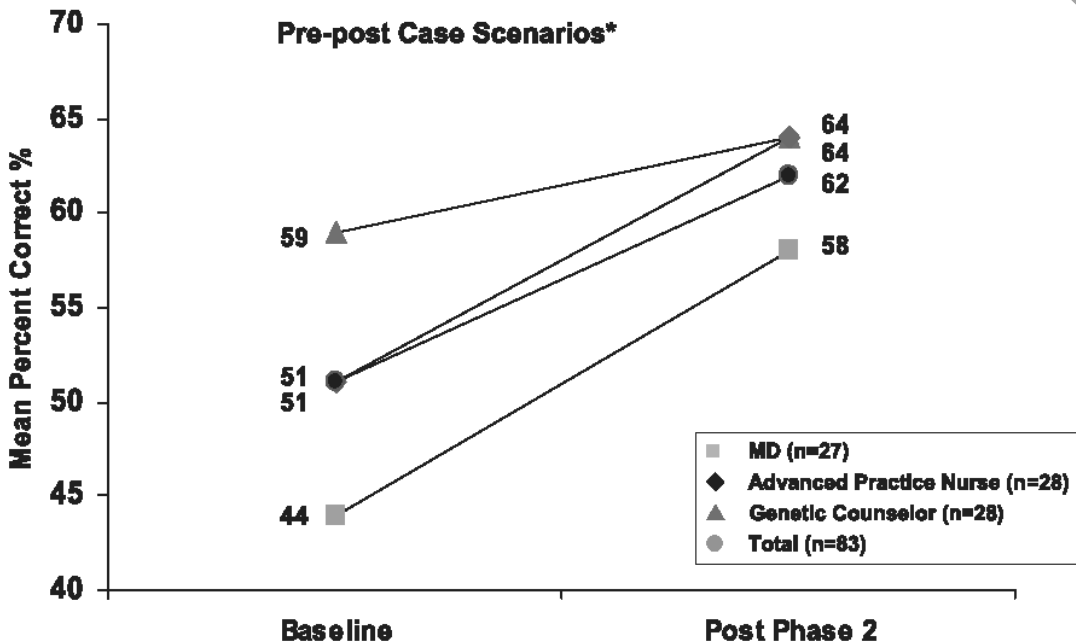
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**A**  
Change in Declarative & Procedural Knowledge (Assessment Levels 3A/B)



**B**  
Change in Case-based Skills (Assessment Level 4)

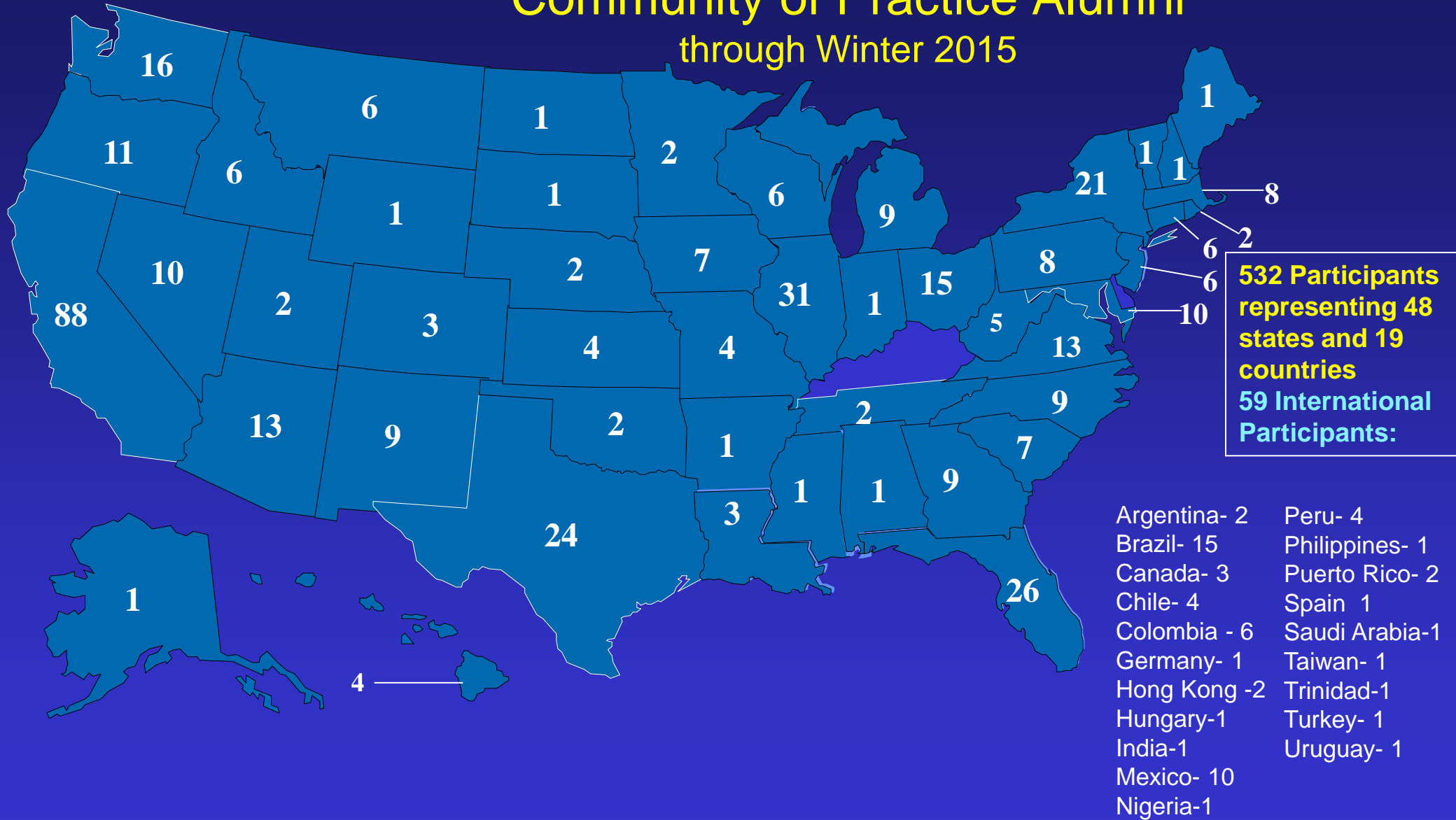


*Contributing to  
COH ACCME  
Accreditation with  
Commendation*

*Pilot  
Phase*

- Expanded CME Outcomes Assessment \*
- LEVEL 1 Participation
- LEVEL 2 Satisfaction
- LEVEL 3A Declarative Knowledge (Knows)
- LEVEL 3B Procedural Knowledge (Knows how)
- LEVEL 4 Competence (Shows How)
- LEVEL 5\* Performance (Practice Change)
- LEVEL 6 Patient Health (Records; Report)
- LEVEL 7 Community Health

# Intensive Course/Clinical Cancer Genetics Community of Practice Alumni through Winter 2015



16

6

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88

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**532 Participants representing 48 states and 19 countries**  
**59 International Participants:**

5

13

13

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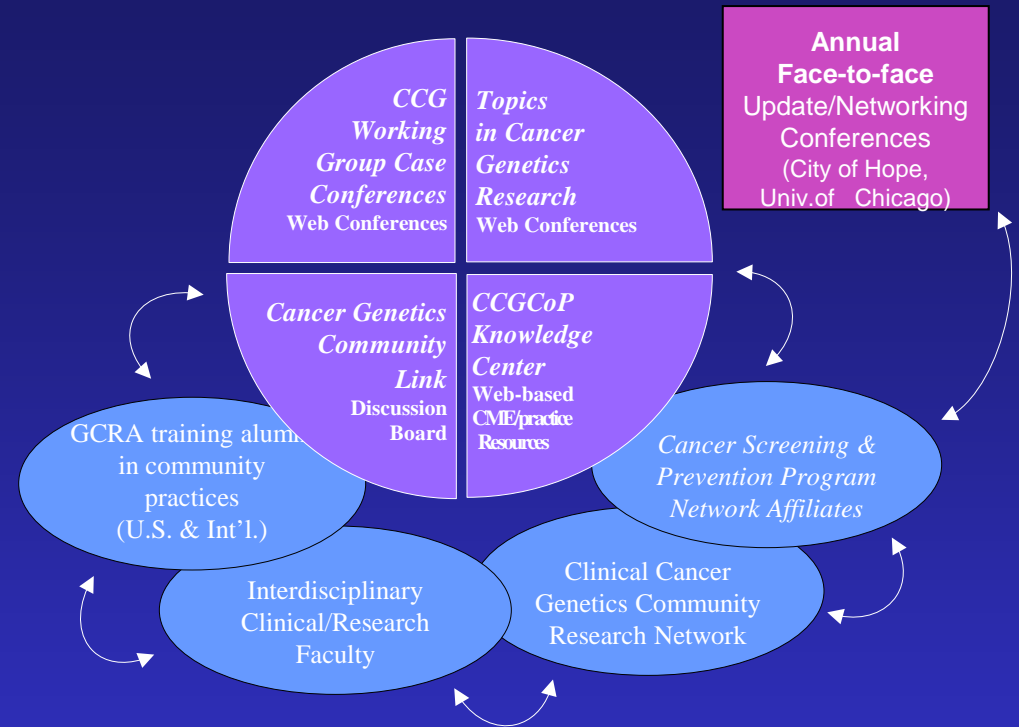
4

- Argentina- 2
- Brazil- 15
- Canada- 3
- Chile- 4
- Colombia - 6
- Germany- 1
- Hong Kong -2
- Hungary-1
- India-1
- Mexico- 10
- Nigeria-1
- Peru- 4
- Philippines- 1
- Puerto Rico- 2
- Spain 1
- Saudi Arabia-1
- Taiwan- 1
- Trinidad-1
- Turkey- 1
- Uruguay- 1

# CLINICAL CANCER GENOMICS COMMUNITY OF PRACTICE



 City of Hope.



- Community of practice – Central construct of *situated learning* (Lave and Wenger 1991)
- Defined by a commitment to explore, co-generate knowledge and build relationships toward a “...*shared practice, which directly affects the behaviors and abilities of its members.*” (Wenger, et al., 2002)

*The essence of the community of practice is its members, who are connected by common learning and professional development goals*



# Clinical Cancer Genetics Working Group

## Bridging Quality Care and Research



### GCRA Delivery Method

### Quality Assurance

### GCRA Research

GCRA with cancer risk counselor alone

Initial GCRA with genetic counselor; MD seen on follow up visit

Initial and follow-up GCRA with genetics team (genetic counselor and MD)

Weekly **Clinical Cancer Genetics Working Group**  
(Multidisciplinary team: medical and surgical oncologists, clinical geneticist, molecular geneticist, cancer risk counselors, clinical research associates)

Strategies for risk assessment  
Recommendations for Surveillance and Risk

Identify clinically relevant research themes

Health services, clinical and behavioral outcomes research

Enrollment in clinical cancer prevention






- A CME-accredited Web-based forum for interdisciplinary review of GCRA cases
- Conducted every Wednesday 10:00-11:30 am PST
- Resources
  - *Working Group Essentials Toolkit*
  - *Working Group Discussion Board*
  - *Recorded Sessions Archived (Streaming Media)*

- Case conferencing helped participants identify their unique GCRA knowledge and skills gaps
- Deeper knowledge and skills needs reflected complex GCRA competencies
- Many gaps congruent with new knowledge identified (Finding #1)

Knowledge/Skills Domain	Frequency <sup>a</sup>	Knowledge Gap Identified by Participant
Cancer Genetics/ Recognizing Features of Hereditary Cancer	98	<i>"I need to be much more familiar with criteria for Cowden and other syndromes and to apply them in my practice." –MD Participant</i>
Interpreting Genetic Test Results	89	<i>"I need to learn more about what positive/negative/uninformative [test] results mean for the patient and the family." –APN Participant</i>
Documenting; Verifying Cancer Family History	79	<i>"I am impressed with how confirmation of cancer histories makes a difference...this should help me be more aggressive about getting accurate histories." –MD Participant</i>
Assessing Cancer Family History; Developing Differential Diagnoses	70	<i>"Need to reinforce my knowledge of more syndromes...to determine when pedigrees with multiple cancer types may be concerning." –APN Participant</i>
Estimating Mutation Probabilities/Empiric Cancer Risks	66	<i>"I need to become more comfortable using different models to assess probabilities and risk." –GC Participant</i>
Developing Personalized Risk Management Recommendations	68	<i>"I need to learn current recommendations for risk-reducing [surgeries]. Surprised to hear they might be recommended in an older patient." –GC Participant</i>


<sup>a</sup> Frequencies based on number of times each category of open-ended response was documented on Case Conference Feedback Forms.

# LinkedIn CCGCoP Group



Advanced7

Home Profile Network Jobs Interests Business Services Upgrade


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## City of Hope Clinical Cancer Genetics Community of Practice

129 members Member  


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**CLINICAL CANCER GENETICS COMMUNITY OF PRACTICE**


City of Hope Clinical Cancer Genetics Community of Practice brings cancer genetics practitioners from diverse practice settings together for professional learning, enduring patient-centered support and dynamic community-based research collaborations to promote quality care and improved patient outcomes across the U.S. and internationally.

### Members of this Group



[Sharon Sand](#)  
Clinical Research Administrator at City of Hope  
[Unfollow Sharon](#)


[See all members](#)



### Joanna Rudnick's IN THE FAMILY...watch it for free


[Bita Nehoray, MS, LCGC](#)  
If you haven't yet seen Joanna Rudnick's IN THE FAMILY, you can view it online for free. Enjoy!

<http://www.cultureunplugged.com/play/9605/In-the-Family>




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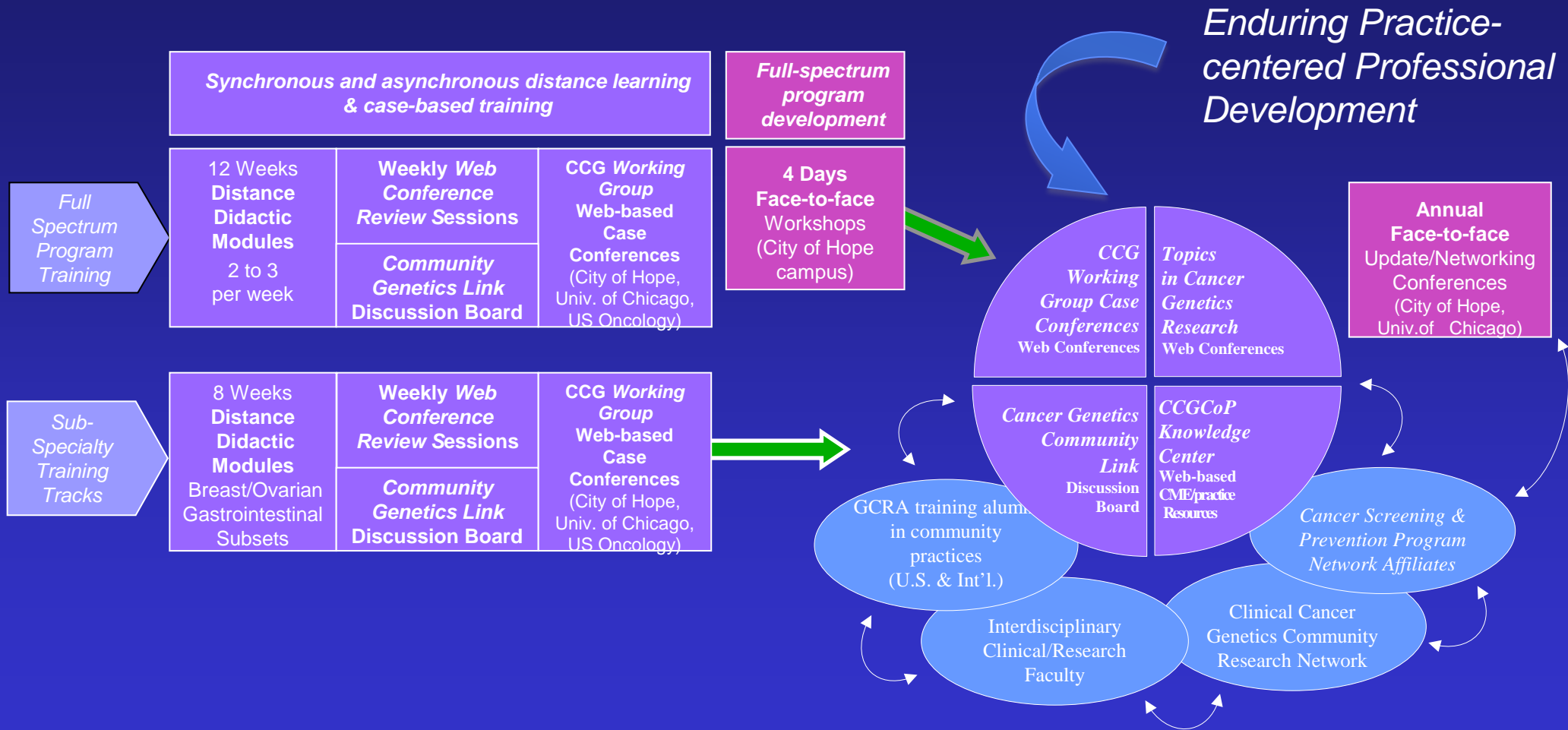
## CLINICAL CANCER GENETICS COMMUNITY OF PRACTICE



 City of Hope.

City of Hope Clinical Cancer Genetics Community of Practice brings cancer genetics practitioners from diverse practice settings together for professional learning, enduring patient-centered support and dynamic community-based research collaborations to promote quality care and improved patient outcomes across the U.S. and internationally.

# Evolving Model for Academic Health Center-mediated Communities of Practice



Supported by NCI R25-CA171998-01A1 (Co-PI's Blazer and Weitzel)



Randall Burt



Patricia Ashton-Prolla



Fergus J. Couch



Kevin Davies



Charis Eng



Carol Fabian



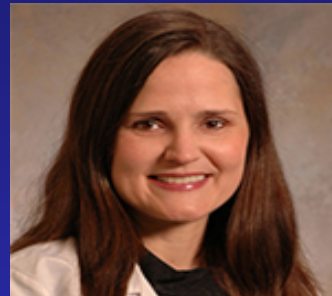
Judy Garber



Heather Hampel



Karen Hurley



Sonia Kupfer



Lucille Leong



Patrick Lynch



Lindsey Middleton



Robert Morgan



Therese M. Mulvey



Rebecca Nagy



Kevin Offit



Colin Pritchard



Mark E. Robson



April D. Sorrell



Louise C. Strong



Sharon Wilczynski,



Janet Williams

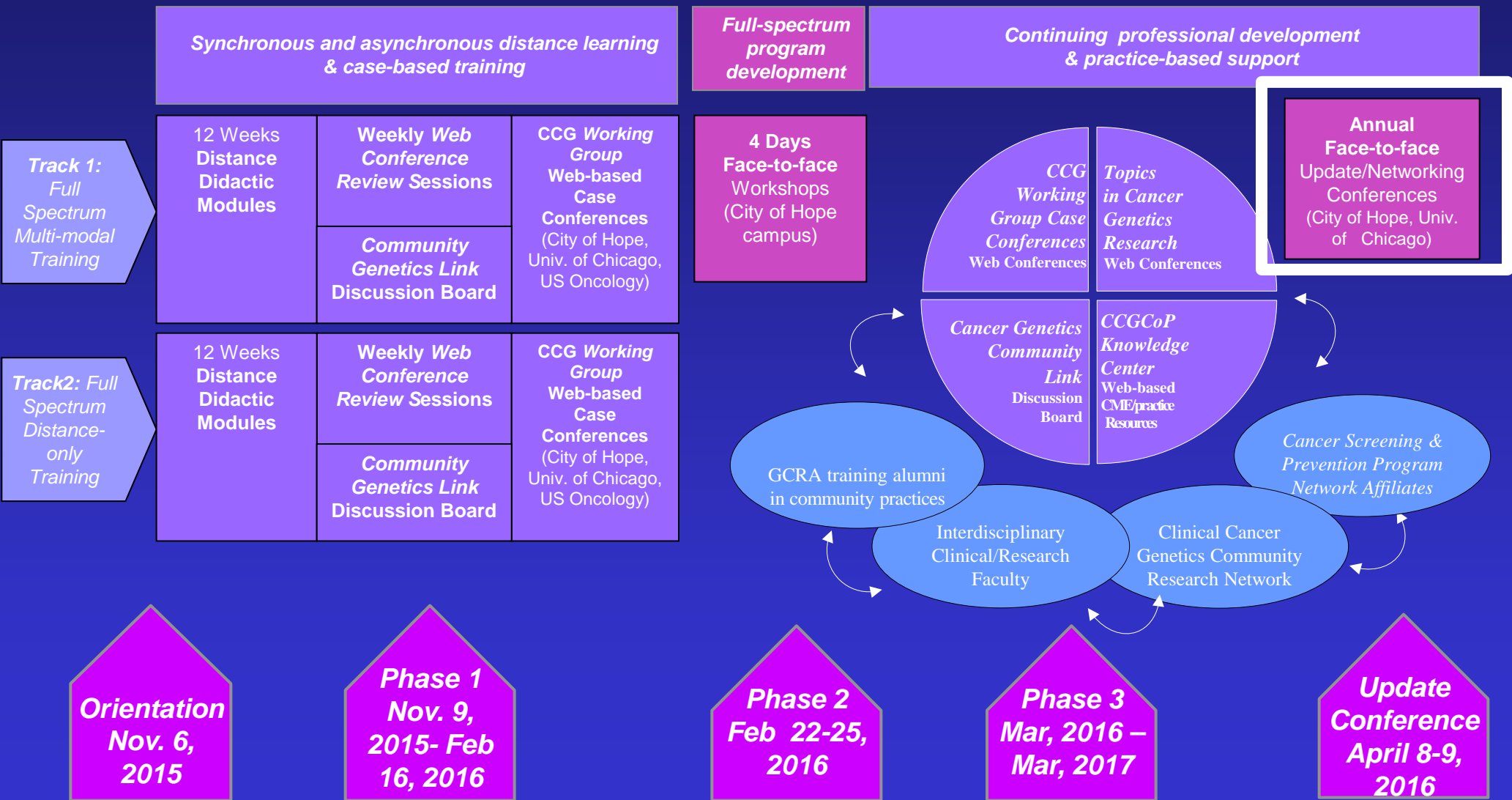


Marc S. Williams

# City of Hope

## Clinical Cancer Genomics Community of Practice (CCGCoP)

R25CA171998-01A1





MAKING SENSE OF THE SEQUENCE:  
**GENOMICS PRIMER FOR CLINICAL  
CANCER GENETIC PRACTITIONERS**

April 11-12, 2014



Sponsored By:  
THE UNIVERSITY OF CHICAGO  
DEPARTMENT OF MEDICINE  
Section of Hematology and Oncology &  
The Center for Clinical Cancer Genetics  
In Collaboration with The City of Hope  
Division of Clinical Cancer Genetics

HYATT CHICAGO MAGNIFICENT MILE  
633 N St. Clair Street  
Chicago, IL 60611

**CONFERENCE CO-DIRECTORS**

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Walter L. Palmer Distinguished Service Professor  
Department of Medicine and Human Genetics  
Director, Cancer Risk Clinic  
The University of Chicago

Sonia S. Kupfer, MD  
Assistant Professor of Medicine  
Section of Gastroenterology  
Department of Medicine  
The University of Chicago

This educational activity is funded in part by:  
Ralph and Marion Falk Medical Research Trust  
Entertainment Fund National Women's  
Cancer Research Alliance

Register online at: [cme.uchicago.edu](http://cme.uchicago.edu)

**Annual Genomics  
Update Conferences:  
Opportunities to earn  
collaboration from  
community based  
clinicians, while  
enhancing quality**

Next in Chicago,  
April 8-9, 2016



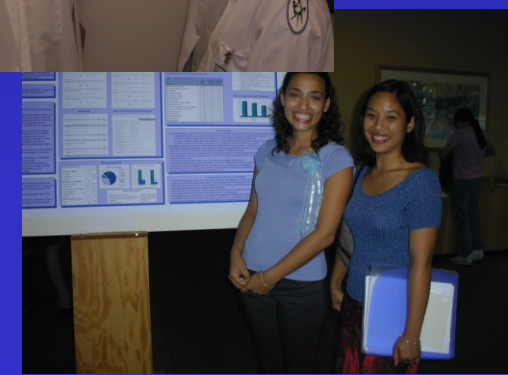
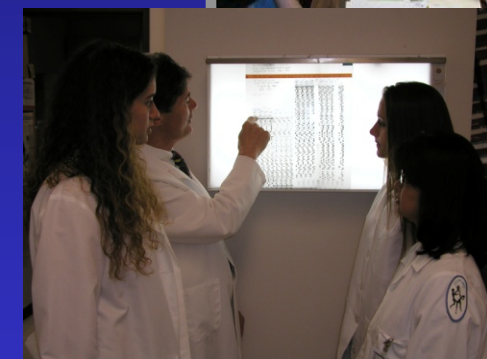
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BIOLOGICAL  
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# CLINICAL CANCER GENETICS COMMUNITY OF PRACTICE



## Clinical Cancer Genetics Community Research Network



- Growing Cancer Epidemiology Cohort
- Represents community-based oncogenetic practices across the U.S and Latin America
- Engages community-based clinicians, including underserved outreach clinics
- Same data collection instruments and protocols used across all collaborating sites

*Key ingredients for robust translational research*

# Clinical Cancer Genetics Community Research Network

## Safety-net County Hospitals and Underserved Community Practices (4)

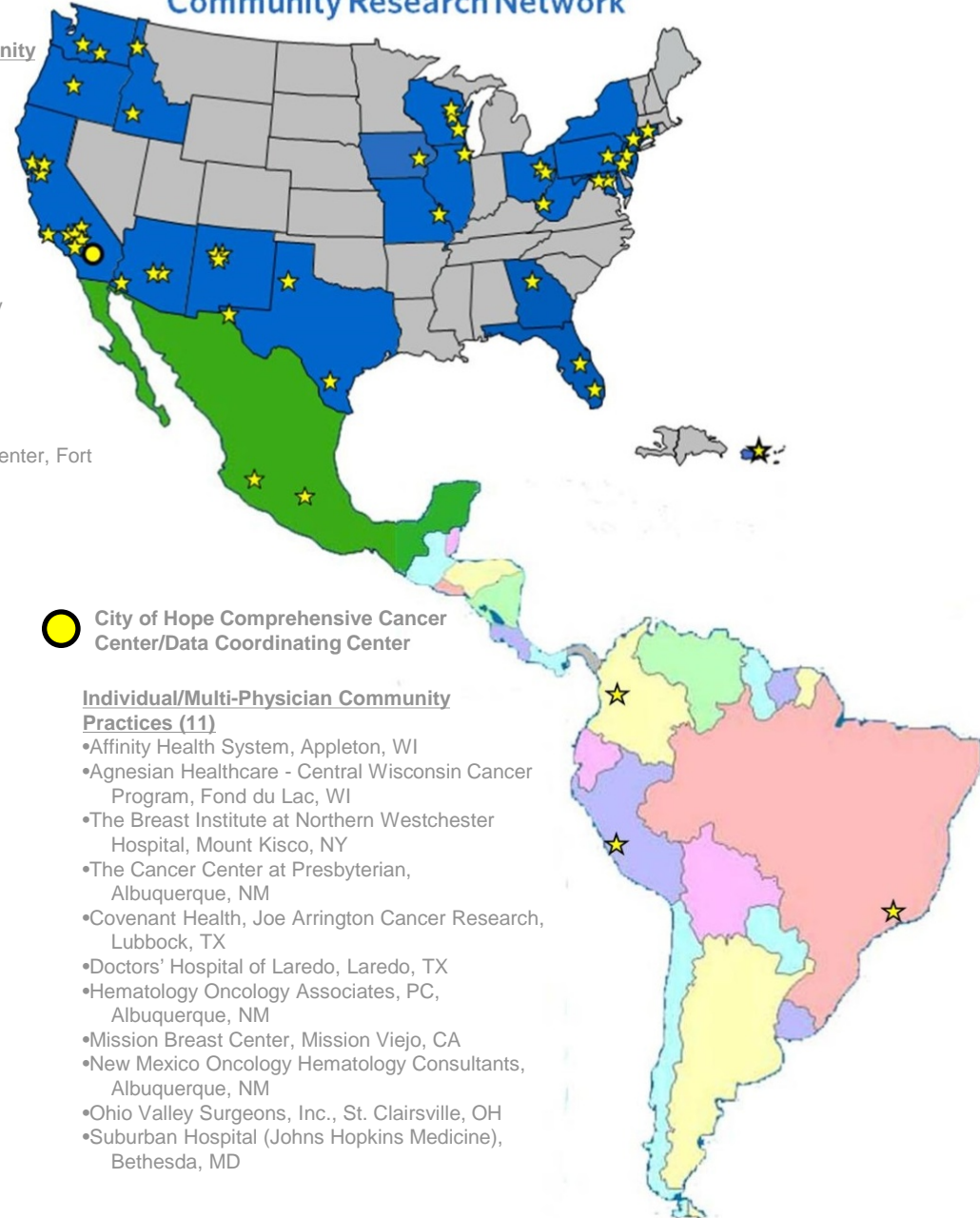
- DeKalb Medical Center, Decatur, GA
- John H. Stroger Hospital of Cook County, Chicago, IL
- Maricopa Medical Center, Phoenix, AZ
- Olive View Medical Center, Sylmar, CA

## Community-Based Regional Medical Center (27)

- Aultman Hospital, Canton, OH
- The Cancer Center of Paoli Hospital, Paoli, PA
- Cancer Center of Santa Barbara, Santa Barbara, CA
- Edwards Comprehensive Cancer Center, Huntington, WV
- Emanuel Cancer Center, Turlock, CA
- Frederick Memorial Hospital, Oncology Care Consultants, Frederick, MD
- Good Samaritan Banner Health System, Phoenix, AZ
- Hall-Perrine Cancer Center, Cedar Rapids, IA
- Holy Cross Hospital - Michael & Dianne Bienes Cancer Center, Fort Lauderdale, FL
- Hunterdon Cancer Center, Flemington, NJ
- John Muir Medical Center, Concord, CA
- Kadlec Medical Center, Richland, WA
- Kootenai Cancer Center, Coeur d'Alene, ID
- Lynn Cancer Institute, Boca Raton, FL
- ProHealth Care Regional Cancer Center, Waukesha, WI
- Reading Hospital, West Reading, PA
- Saddleback Memorial Medical Center, Laguna Hills, CA
- Saint Alphonsus Regional Medical Center, Boise, ID
- St. Charles Hospital, Bend, OR
- St. Joseph Hospital, Orange, CA
- St. Jude Medical Center, Fullerton, CA
- Sutter Roseville Medical Center, Roseville, CA
- Texas Tech University, El Paso, TX
- UConn Health Center, Farmington, CT
- UF Health Cancer Center - Orlando Health, Orlando, FL
- Yakima Memorial Hospital, Yakima, WA
- Yuma Regional Medical Center, Yuma, AZ

## Latin American Settings (6)

- Clinica del Country, Bogotá, Colombia
- Hospital of Porto Alegre, Brazil
- INCan (Instituto Nacional de Cancerología), Mexico City, Mexico
- INEN (Instituto Nacional de Enfermedades Neoplásicas), Lima, Peru
- University of Guadalajara, Guadalajara, Mexico
- University of Puerto Rico, San Juan, Puerto Rico

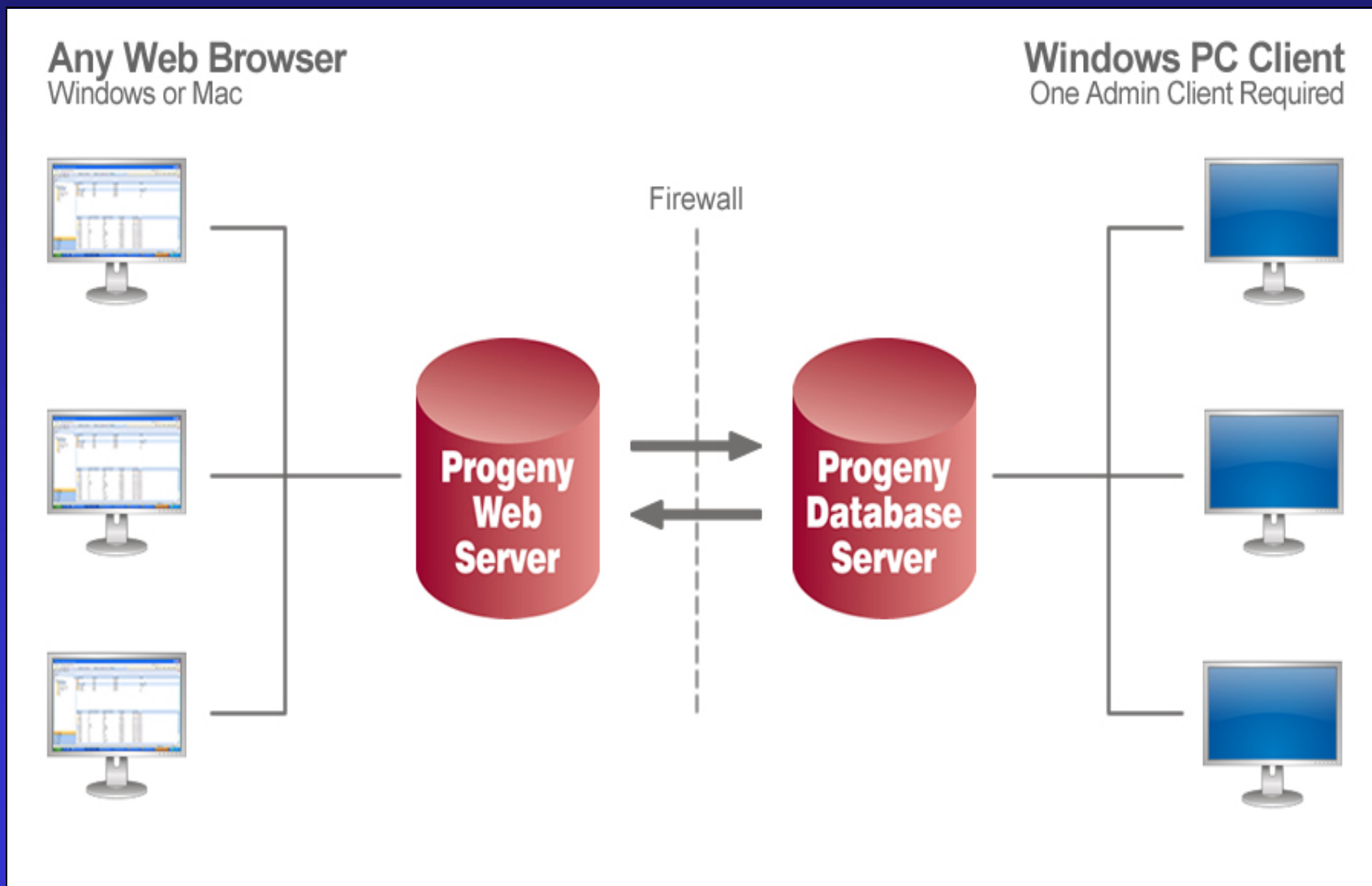


 **City of Hope Comprehensive Cancer Center/Data Coordinating Center**

## Individual/Multi-Physician Community Practices (11)

- Affinity Health System, Appleton, WI
- Agnesian Healthcare - Central Wisconsin Cancer Program, Fond du Lac, WI
- The Breast Institute at Northern Westchester Hospital, Mount Kisco, NY
- The Cancer Center at Presbyterian, Albuquerque, NM
- Covenant Health, Joe Arrington Cancer Research, Lubbock, TX
- Doctors' Hospital of Laredo, Laredo, TX
- Hematology Oncology Associates, PC, Albuquerque, NM
- Mission Breast Center, Mission Viejo, CA
- New Mexico Oncology Hematology Consultants, Albuquerque, NM
- Ohio Valley Surgeons, Inc., St. Clairsville, OH
- Suburban Hospital (Johns Hopkins Medicine), Bethesda, MD

# CCGCRN informatics: High quality Pedigrees from a distributed consortium



# City of Hope Division of Clinical Cancer Genetics

*Center of excellence in cancer genetic/genomic risk assessment, research and education*

## **Cancer Screening & Prevention Program**

## **Epidemiology & Molecular Genetics Laboratory**

## **Cancer Genetics Education Program**

### **Registry/CCGCRN Cohort Research Enterprise**

Biospecimens, family history, Risk factor and patient follow-up data

### **Epidemiology**

- Genotype/phenotype
- Gene/environment effects

### **Health Outcomes**

- Survival, new primary cancers
- Effectiveness of interventions

### **Health Services**

- Risk assessment methods
- Tech-enabled delivery
- mHealth applications

### **Health Behaviors**

- Patient behaviors
- Family communications

### **Health Disparities**

- Promoting access/equity
- Identifying/addressing barriers

### **Basic/Molecular**

- Genomic discovery
- Functional analysis
- Tumor genomics

### **Translational Applications**

- genomic testing platforms
- Cell free DNA cancer screening

### **Clinical Trials**

- Prevention/Screening
- Targeted treatment

### **National & International Collaborations**

- Molecular Epidemiology
- Clinical Outcomes Consortia

### **Intensive Course in Cancer Risk Assessment**

- Practitioner-level competence for Healthcare Professionals
- Source of engagement for CCGCRN

### **Clinical Cancer Genetics Community of Practice**

- Procedural standardization and quality improvement
- Professional satisfaction
- CCGCRN member retention

### **Patient Conferences & Public Education**

- Patient support/Public awareness
- CCGCRN cohort outreach

## Multiplex Genetic Testing for Cancer Susceptibility: Out on the High Wire Without a Net?

Susan M. Domchek and Angela Bradbury, *University of Pennsylvania, Philadelphia, PA*

Judy E. Garber, *Dana-Farber Cancer Institute, Boston, MA*

Kenneth Offit and Mark E. Robson, *Memorial Sloan-Kettering Cancer Center and Weill Cornell Medical College, New York, NY*

## Genetic Cancer Susceptibility Testing: Increased Technology, Increased Complexity

Peter Paul Yu, *Palo Alto Medical Foundation, Palo Alto, CA*

Julie M. Vose, *The University of Nebraska Medical Center, Omaha, NE*

Daniel F. Hayes, *The University of Michigan Comprehensive Cancer Center, Ann Arbor, MI*



# Next-Generation Testing for Cancer Risk: Perceptions, Experiences, and Needs Among Early Adopters in Community Healthcare Settings

Kathleen R. Blazer,<sup>1</sup> Bitu Nehoray,<sup>1</sup> Ilana Solomon,<sup>1</sup> Mariana Niell-Swiler,<sup>1</sup> Julie O. Culver,<sup>1</sup> Gwen C. Uman,<sup>2</sup> and Jeffrey N. Weitzel<sup>1</sup>

Knowledge/  
Expertise

results. All respondents

- Cost to patient/Lack of insurance coverage

23

*"Cancer patients are burdened with many bills and I would not want to contribute to the anxiety caused by these bills, especially when the clinical yield may be low." GC Respondent*

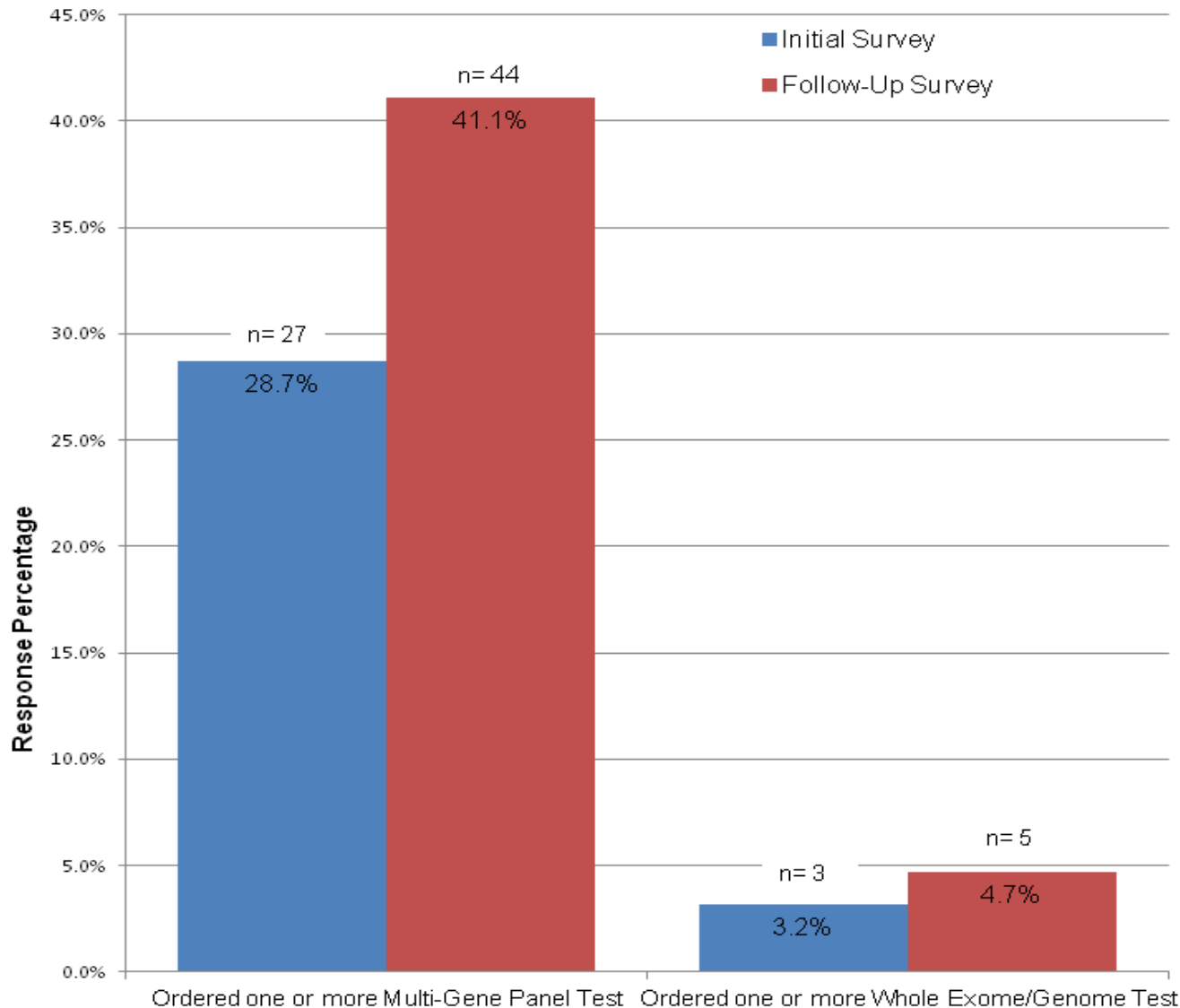
- Confusing/  
Ambiguous test results

10

*"There is a greater chance that we would get ambiguous results, VUS, or a mutation that may not track with the cancer in other family members, all of which could lead to confusion." GC Respondent*

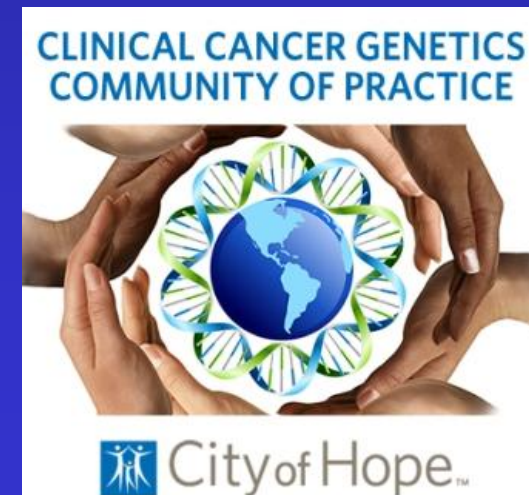
\*Number of times each category of response was documented on open-ended survey prompts.

# Community clinician utilization of next-generation sequencing tools for GCRA



Rapidly changing  
landscape:  
6-month interval  
change in use

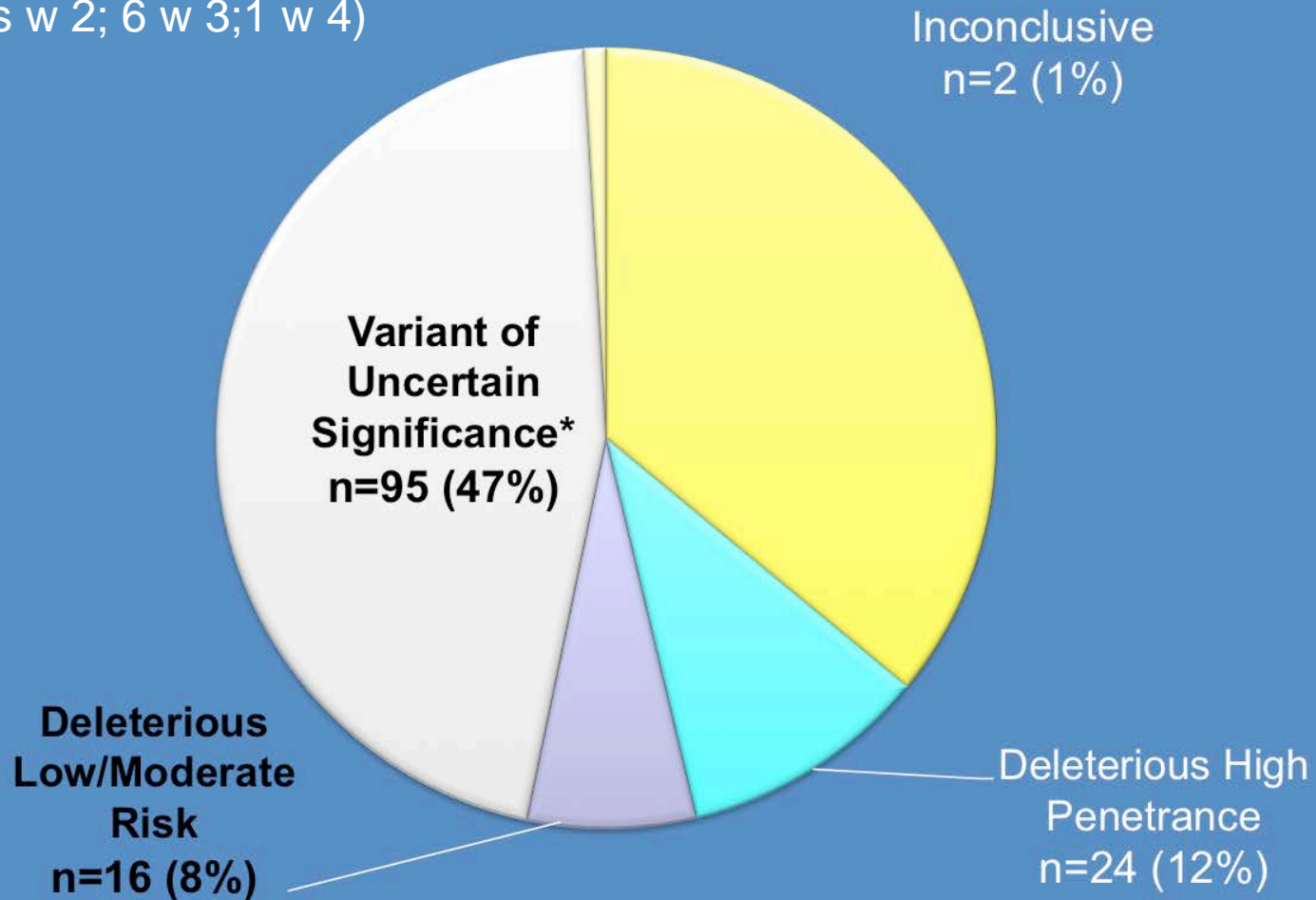
From: Blazer, et al. ASCO 2013;  
Genetic Testing and  
Biomarkers 2015



# CCGCoP Case Conferences

## Multigene Panel Results (N=204) Jan 2012-2013

\*112 total VUSs  
(16 cases w 2; 6 w 3; 1 w 4)



## MULTI-GENE TESTING

**GENERAL RECOMMENDATIONS**

## Provider:

1. Because of their complexity hereditary cancer multigene tests should be ordered in consultation with a cancer genetics professional.<sup>a</sup>
2. As in other genetic testing, an affected family member should be tested first, whenever possible.
3. Multi-gene testing may be more cost- and time-effective in certain cases than sequentially testing more than 2–3 single genes associated with a phenotype.
4. Since genes can be easily added or removed from multi-gene tests over time by a given lab, medical records must document which genes were included in the specific multi-gene test used for each patient, and in which labs they were performed.
5. Multi-gene tests vary in technical specifications (eg. depth of gene coverage, extent of intron/exon boundary analysis, methodology)

- *ASCO affirms that it is sufficient for cancer risk assessment to evaluate genes of established clinical utility that are suggested by the patient's personal and/or family history.*
- *Because of the current uncertainties and knowledge gaps, providers with particular expertise in cancer risk assessment should be involved in the ordering and interpretation of multigene panels*

## American Society of Clinical Oncology Policy Statement Update: Genetic and Genomic Testing for Cancer Susceptibility

Mark E. Robson, Angela R. Bradbury, Banu Arun, Susan M. Domchek, James M. Ford, Heather L. Hampel, Stephen M. Lipkin, Sapna Syngal, Dana S. Wollins, and Noralime M. Lindor

# Conclusions

- Training in genomic cancer risk assessment and counseling is important for clinical implementation of precision medicine for more effective treatment and prevention, and should be disseminated

Participating in Web-based case conferences concurrently with distance didactics:

- Generates new learning and reinforced existing knowledge in a broad spectrum of GCRA knowledge and skills domains
- Prompted participants to identify knowledge gaps, apply new knowledge and improve practice
- Participation in research registries is a critical contribution to wellness
- The remarkable advances in genomic analysis technologies should be brought to bear to enhance access globally

