SESSION IV:
JOINT ACADEMY/PROFESSIONAL SOCIETY APPROACH TO GENETICS EDUCATION

IOM Roundtable
Improving Genetics Education in Graduate and Continuing Health Professional Education: A Workshop
August 18th 2014

Presented by: *Michael F. Murray, MD*
Co-chair, ISCC

Director of Clinical Genomics
Genomic Medicine Institute
Geisinger Health System

What is this????

Applying Genomic Sequencing Data in Patient Care

Inter-Society Coordinating Committee for Practitioner Education in Genomics (ISCC)

- Formed in February 2013 (from the NHGRI's Genomic Medicine IV meeting)

ACP'S SURVEY OF INTERNISTS

- **Web survey was sent to 806 participants from ACP's Internal Medicine Research Panel who met the following criteria:**
  - **U.S. Internist**
  - **Actively working in medicine**
  - **Spending some/all professional time in direct patient care**
- **486 Internists responded to the survey (60% response rate)**

Survey conducted Fall 2012

Respondent Demographics

Age:

- Resident/Fellow 20%
- Under 40: 18%
- 40 to 55: 35%
- Over 55: 27%

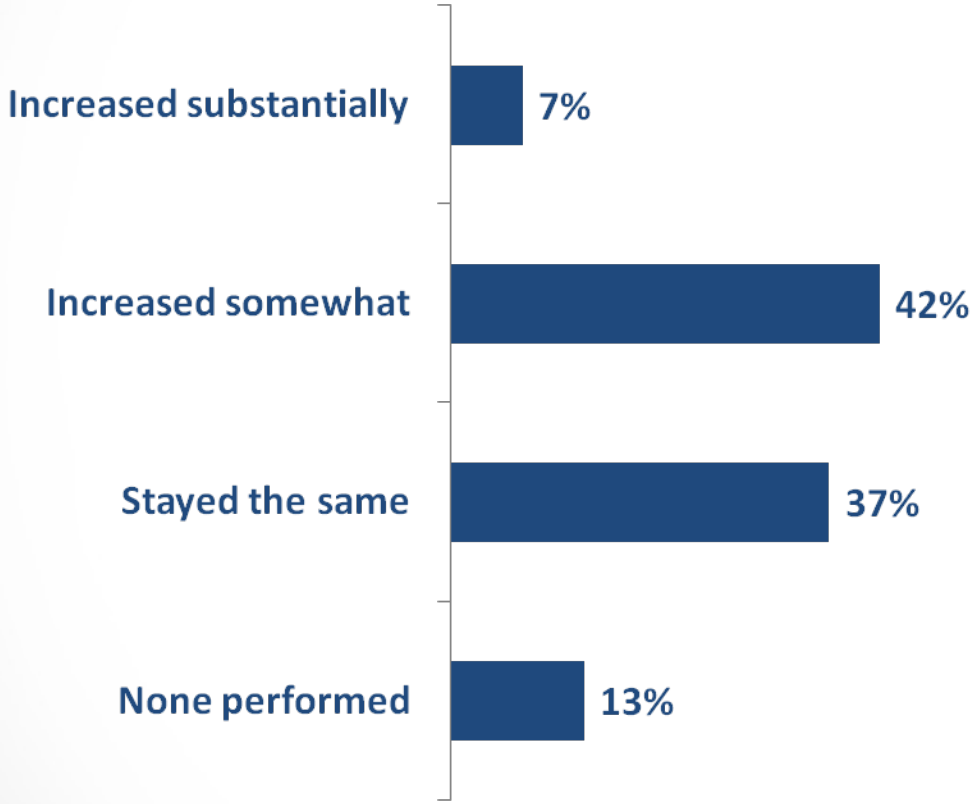
Work Setting:

- Private office: 42%
- Hospital: 25%
- AMC: 23%
- Other: 11%

Specialty:

- IM Specialist: 60%
- IM Subspecialist: 40%

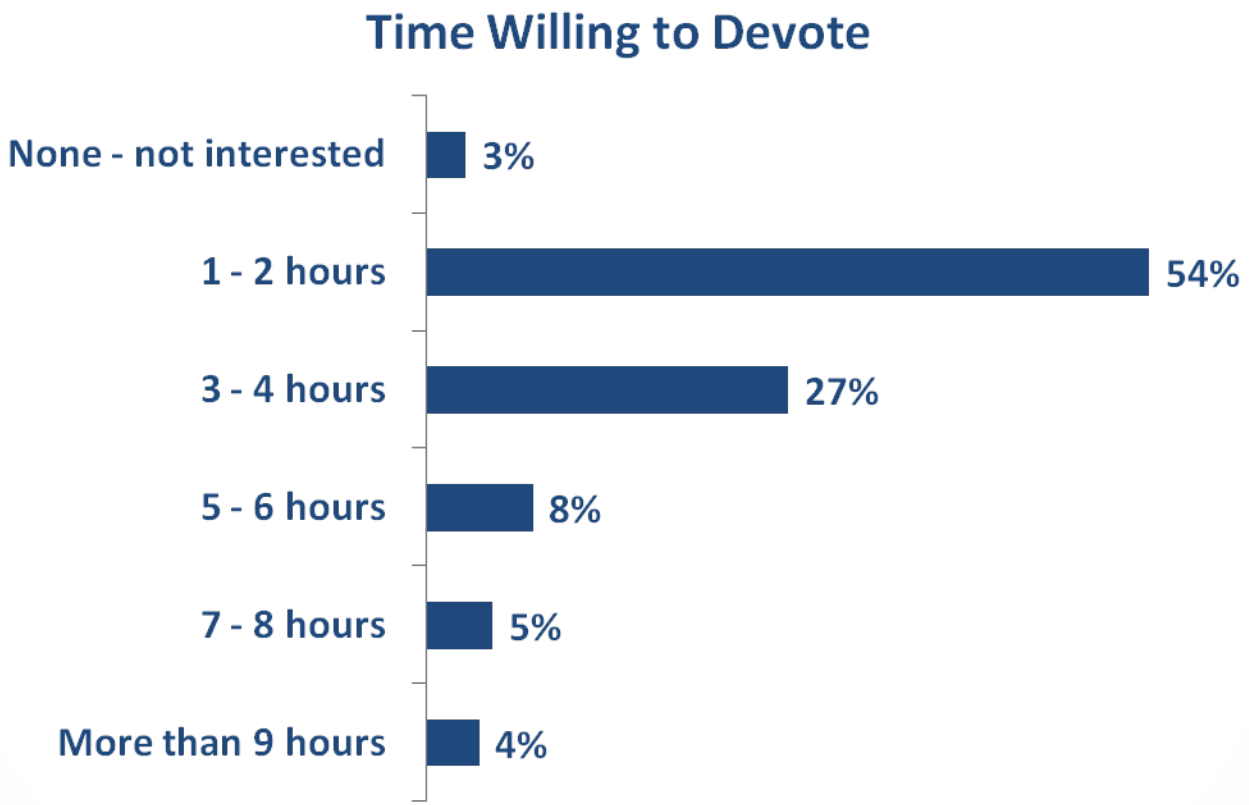
Changes in volume of genetic testing over the prior two years [2011-2012]



Percentage reporting an increase:

- IM Subspecialists: 56%
- IM Specialists: 44%

The overwhelming majority of Internists are willing to devote time to Genomics Education



Inter-Society Coordinating Committee for Practitioner Education in Genomics (ISCC)

- Formed in February 2013 (from the NHGRI's Genomic Medicine IV meeting)
- The group facilitates interactions among medical professional societies and the NIH Institutes & Centers to exchange practices and resources in genomic education and clinical care.

Inter-Society Coordinating Committee for Practitioner Education in Genomics (ISCC)

GOALS and AIMS

•Promote the sharing of educational approaches and the joint identification of educational needs in order to improve genomic literacy and to enhance the practice of genomic medicine.

•Jointly identify the needs of professional societies and clinicians in filling in gaps in evidence and knowledge and in providing effective educational efforts.

•ISCC offers partnership and available expertise to these societies to guide development of educational initiatives.

COMMENTARY | Genetics inMedicine

The growing role of professional societies in educating clinicians in genomics

Teri A. Manolio, MD, PhD[1] and Michael F. Murray, MD[2]; for the Inter-Society Coordinating Committee for Practitioner Education in Genomics

Inter-Society Coordinating Committee for Practitioner Education in Genomics (ISCC)

MEMBERS

Accreditation Council for Continuing Medical Education (ACCME)
Accreditation Council for Graduate Medical Education (ACGME)
American Academy of Family Physicians (AAFP)
American Academy of Ophthalmology (AAO)
American Academy of Pediatrics (AAP)
American Association for Clinical Chemistry (AACC)
American Board of Medical Genetics (ABMG)
American Board of Medical Specialties (ABMS)
American Board of Ophthalmology (AAO)
American College of Cardiology (ACC)
American College of Medical Genetics and Genomics (ACMG)
American College of Physicians (ACP)
American Congress of Obstetricians and Gynecologists (ACOG)
American Dental Association (ADA)
American Dental Education Association (ADEA)
American Heart Association (AHA)
American Medical Association (AMA)
American Society of Human Genetics (ASHG)
American Society of Clinical Oncology (ASCO)
American Thoracic Society (ATS)
Association for Molecular Pathology (AMP)
Association of Professors of Human and Medical Genetics (APHMG)
Centers for Medicare and Medicaid Services (CMS)
College of American Pathologists (CAP)
Council of Medical Specialty Societies (CMSS)
Health Resources and Services Administration (HRSA)
International Association for Dental Research (IADR)
International Society of Psychiatric Genetics (ISPG)
National Center for Biotechnology Information (NCBI)
National Cancer Institute (NCI)
National Eye Institute (NEI)
National Heart, Lung, and Blood Institute (NHLBI)
National Human Genome Research Institute (NHGRI)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Allergy and Infectious Diseases (NIAID)
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
National Institute of Child Health and Human Development (NICHD)
National Institute on Drug Abuse (NIDA)
National Institute on Deafness and Other Communication Disorders (NIDCD)
National Institute of Dental and Craniofacial Research (NIDCR)
National Institute of General Medical Sciences (NIGMS)
National Institute of Mental Health (NIMH)
National Institute of Neurological Disorders and Stroke (NINDS)
National Library of Medicine (NLM)
Society of General Internal Medicine (SGIM)

Inter-Society Coordinating Committee for Practitioner Education in Genomics (ISCC)

FOUR WORKGROUPS

Competencies (Bruce Korf, Chair)

•Review surveys and other sources to see what competencies would fit into current clinical practice.

•Review any existing competencies in genomic medicine education and existing guidelines in the use of genomics.

•Work with individual professional societies to determine their desire for competencies and where they would fit in.

Inter-Society Coordinating Committee for Practitioner Education in Genomics (ISCC)

FOUR WORKGROUPS

Educational Products (Robert Roberts, Chair)

- Collect existing educational products from ISCC representatives.
- Identify relevant federally-funded resources and initiatives (such as CRVR, PharmGKB, Genetic Testing Registry) that could assist genomics education efforts and clinical practice.
- Work with use cases group to identify areas of emphasis for educational products (e.g. ordering of genetic tests, counseling, return of results).
- Identify new advances that may require educational initiatives.

Inter-Society Coordinating Committee for Practitioner Education in Genomics (ISCC)

FOUR WORKGROUPS

Engagement of Specialty Boards (Nancy Rose, Chair)

•Determine the extent that specialty boards already have genomics in their examinations.

•Reach out to specialty boards that may not be integrating genomics into exams at this time.

•Link specialty boards with relevant professional societies that are already implementing genomics education or are looking to implement.

Inter-Society Coordinating Committee for Practitioner Education in Genomics (ISCC)

FOUR WORKGROUPS

Use Cases (Mark Williams, Chair)

•Collect existing use cases and disseminate through ISCC dissemination efforts.
•Develop general and society-specific use cases in genetics in five general topic areas: Pharmacogenomics, Family History, Rare, single gene disorders, Common Disease with genetic component, Whole Genome/Exome sequencing (Incidental Findings).
•Coordinate with the Educational Products WG to identify and develop materials to support use cases
•Coordinate with the Competencies WG to review existing competencies and explore how to translate into use cases that support competency achievement.
•Engage with the specialty end users to:Identify subjects of interest for use case development.
•Evaluate disseminated use cases for relevance and utility.

Inter-Society Coordinating Committee for Practitioner Education in Genomics (ISCC)

COMPETENCES AND MAPPING COMPETENCIES

SPECIAL ARTICLE | Genetics inMedicine

Framework for development of physician competencies in genomic medicine: report of the Competencies Working Group of the Inter-Society Coordinating Committee for Physician Education in Genomics

Bruce R. Korf, MD, PhD[1], Anna B. Berry, MD[2,3], Melvin Limson, PhD[4], Ali J. Marian, MD[5], Michael F. Murray, MD[6], P. Pearl O'Rourke, MD[7], Eugene R. Passamani, MD[8], Mary V. Relling, PharmD[9], John Tooker, MD, MBA[10], Gregory J. Tsongalis, PhD[11,12] and Laura L. Rodriguez, PhD[8]

Inter-Society Coordinating Committee for Practitioner Education in Genomics (ISCC)

COMPETENCES AND MAPPING COMPETENCIES

ENTRUSTABLE PROFESSIONAL ACTIVITIES (EPA)

How Do EPAs Differ From Competencies?

EPAs are not an alternative for competencies, but a means to translate competencies into clinical practice.
Competencies are descriptors of physicians, EPAs are descriptors of work.
EPAs usually require multiple competencies in an integrative, holistic nature.

ISCC Competencies Working Group – EPAs (Entrustable Professional Activities)

1. **Family History EPA:** Elicit, document, and act on relevant family history pertinent to the patient's clinical status
2. **Genomic Testing EPA:** Use genomic testing appropriately to guide patient management
3. **Patient Treatment Based on Genomic Results EPA:** Use genomic information to make treatment decisions
4. **Somatic Genomics EPA:** Use genomic information to guide the diagnosis and management of cancer and other disorders involving somatic genetic changes
5. **Microbial Genomic Information EPA:** Use genomic tests that identify microbial contributors to human health and disease, as well as genomic tests that guide therapeutics in infectious diseases

www.g-2-c-2.org

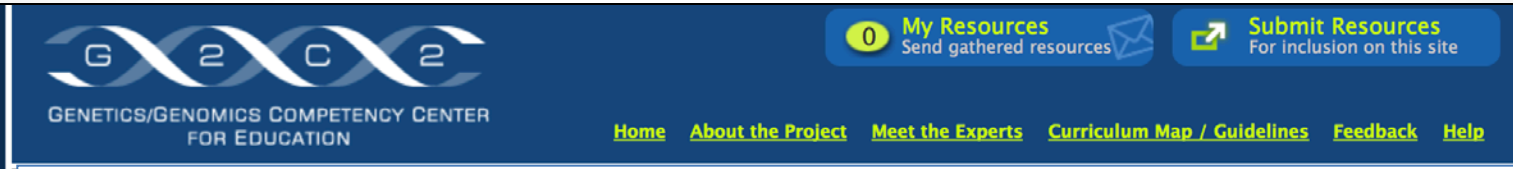

G2C2
Genetics/Genomics Competency Center for Education
0 My Resources
Send gathered resources
Submit Resources
For inclusion on this site
Home
About the Project
Meet the Experts
Curriculum Map / Guidelines
Feedback
Help
Search
Genetic/ Genomic Resources by choosing a discipline
Genetic Counselor
Nurse
Pharmacist
Physician
Physician Assistant
What you can do on this site:
Search by Discipline for Genetics/Genomics Resources to Use in Your Classroom
Find websites, download PDFs, locate courses — enhance your class content with peer reviewed genetic/genomic resources. Search resources within these disciplines:
Genetic Counselors, Nurses, Physician Assistants, Physicians, Pharmacists.
View My Resources Found on This Site
As you find educator resources for your discipline(s) during a site visit, you can mark and collect them in My Resources. There you can access your marked resources and send them to yourself or others via email.
Submit Resources to be Included on This Site
Do you have activities, resources or assessments you would like to share? Submit Resources including websites and PDFs to include in the curricular materials.
Editor's Choice
Application of a Family Pedigree for Nursing Practice: Lesson Plan and Grading Rubric
"Taking a health history and constructing a pedigree are fundamental genetic/genomic skills for healthcare p..."
– Jean Jenkins
LEARN MORE
Watch the Intro Video

Project Funding

From 2008-2009, with funding from the National Human Genome Research Institute, the University of Virginia created the web-based architecture for G2C2.

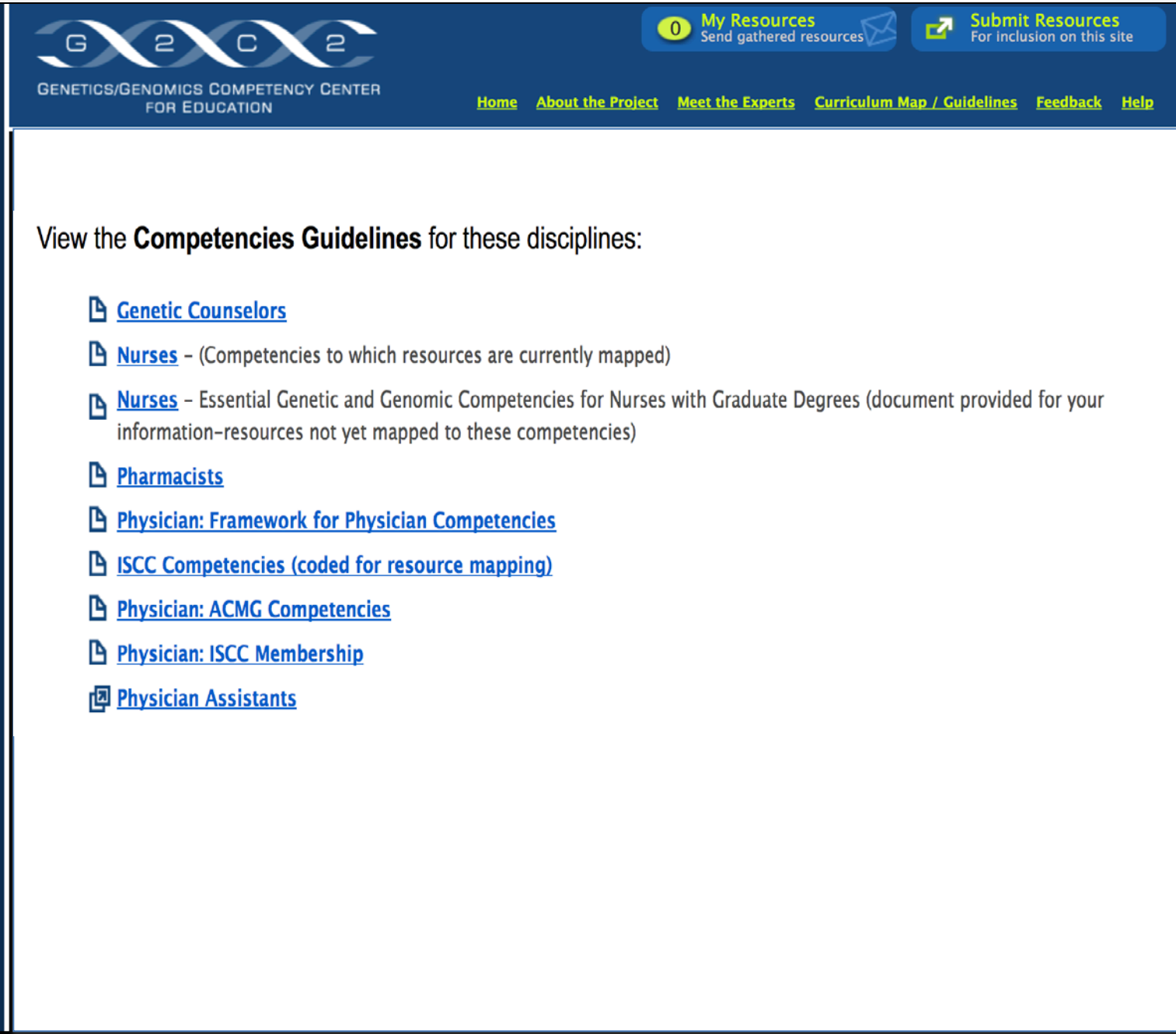
NHGRI funded d'Vinci Interactive in 2010 - 2014 for continued modification, expansion, and development of the G2C2 education repository

www.g-2-c-2.org



- The mission of G2C2 is to provide high quality educational resources for group instruction or self-directed learning in genetics/genomics by health care educators and practitioners.
- The G2C2 solicits, reviews and organizes resources through an interdisciplinary collaborative exchange.
- Responsive to a strong interest in having a centralized web resource for educators that could facilitate communication, development, and dissemination of educational resources and approaches to achieve genetic/genomic competency.
- The Genetics/Genomics Competency Center is:
  - Created to provide healthcare professionals with a learning management system
  - Based on a core set of competencies that organizes genetic/genomic educational materials
  - Streamlined to facilitate standardized curriculum development, and
  - Designed to enhance efforts to develop trans-disciplinary approaches to genetics/genomics education

www.g-2-c-2.org


G2C2
Genetics/Genomics Competency Center for Education
0 My Resources
Send gathered resources
Submit Resources
For inclusion on this site
Home
About the Project
Meet the Experts
Curriculum Map / Guidelines
Feedback
Help
View the Competencies Guidelines for these disciplines:
Genetic Counselors
Nurses – (Competencies to which resources are currently mapped)
Nurses – Essential Genetic and Genomic Competencies for Nurses with Graduate Degrees (document provided for your information–resources not yet mapped to these competencies)
Pharmacists
Physician: Framework for Physician Competencies
ISCC Competencies (coded for resource mapping)
Physician: ACMG Competencies
Physician: ISCC Membership
Physician Assistants

Curriculum Map

Physician

- 1: FAMILY HISTORY
- 2: GENOMIC TESTING
- 3: PATIENT TREATMENT BASED ON GENOMIC RESULTS
- 4: SOMATIC GENOMICS
- 5: MICROBIAL GENOMIC INFORMATION

Project Funding | Support

This project is funded by the NIH National Human Genome Research Institute

Version 2.1.4

Curriculum Map

Physician

1: FAMILY HISTORY

- **P-FH1A**: Patient Care
- **P-FH1B**: Knowledge for Practice
- **P-FH1C**: Practice-Based Learning and Improvement
- **P-FH1D**: Interpersonal and Communication Skills
- **P-FH1E**: Professionalism
- **P-FH1F**: Systems-Based Practice
- **P-FH1G**: Interprofessional Collaboration
- **P-FH1H**: Personal and Professional Development

2: GENOMIC TESTING

3: PATIENT TREATMENT BASED ON GENOMIC RESULTS

4: SOMATIC GENOMICS

5: MICROBIAL GENOMIC INFORMATION

Genomic Sequencing Study Overview

Geisinger Health System is partnering with Regeneron, a leading biopharmaceutical company, for a new, long-term, large research study.

Significance of Genomic Research

Genetic research holds great promise to increase understanding of the causes of diseases, disorders, and medical conditions - including conditions that today have limited or no treatments available. By comparing genetic information against medical histories, Geisinger and Regeneron hope to eventually develop new means of diagnosing, preventing, and/or treating medical conditions - before they cause significant harm. Some participants may also receive information that could be useful in their own medical care.

This study is aligned with Geisinger's focus on innovative research to help patients in our communities - as well as improve healthcare for patients across the nation and worldwide.

Overview

For Patients

For Healthcare Providers

News

Resources

- Genomic Sequencing Study Overview Brochure
- Contact Us
- Geisinger Research Consent Form
- Research Leader Commentary

CLINICIAN GENOMICS EDUCATION

- **Harvard CME [2005-2010]**
- **Medseq [2012-2013]**
- **Geisinger [2014-]**

WHAT DOES THE PROVIDER NEED TO KNOW??

Harvard Medical School
Department of Continuing Education

MedSeq™

GEISINGER HEALTH SYSTEM
REDEFINING BOUNDARIES®

2.5 day CME

- Broad overview
- No immediate application

6.0 hour CME

- Targeted to the task of delivering "General Genome Reports"
- Application in 5-10 cases over 6-12 months
- "Live" resource center

< 1.0 hour CME

- Targeted to a specific result
- Immediate application in one case
- Consultative assistance (formal and curbside)

Thanks to all of my colleagues and collaborators.

Thank You for your attention.