




# Educating Future Physicians in an Era of Genomic Medicine

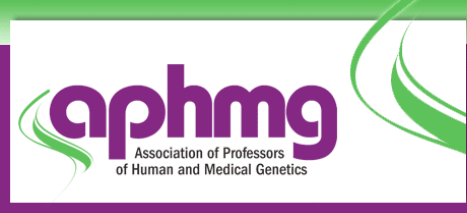
APHMG

Medical Genetics Course Directors Special Interest Group

January 24, 2017

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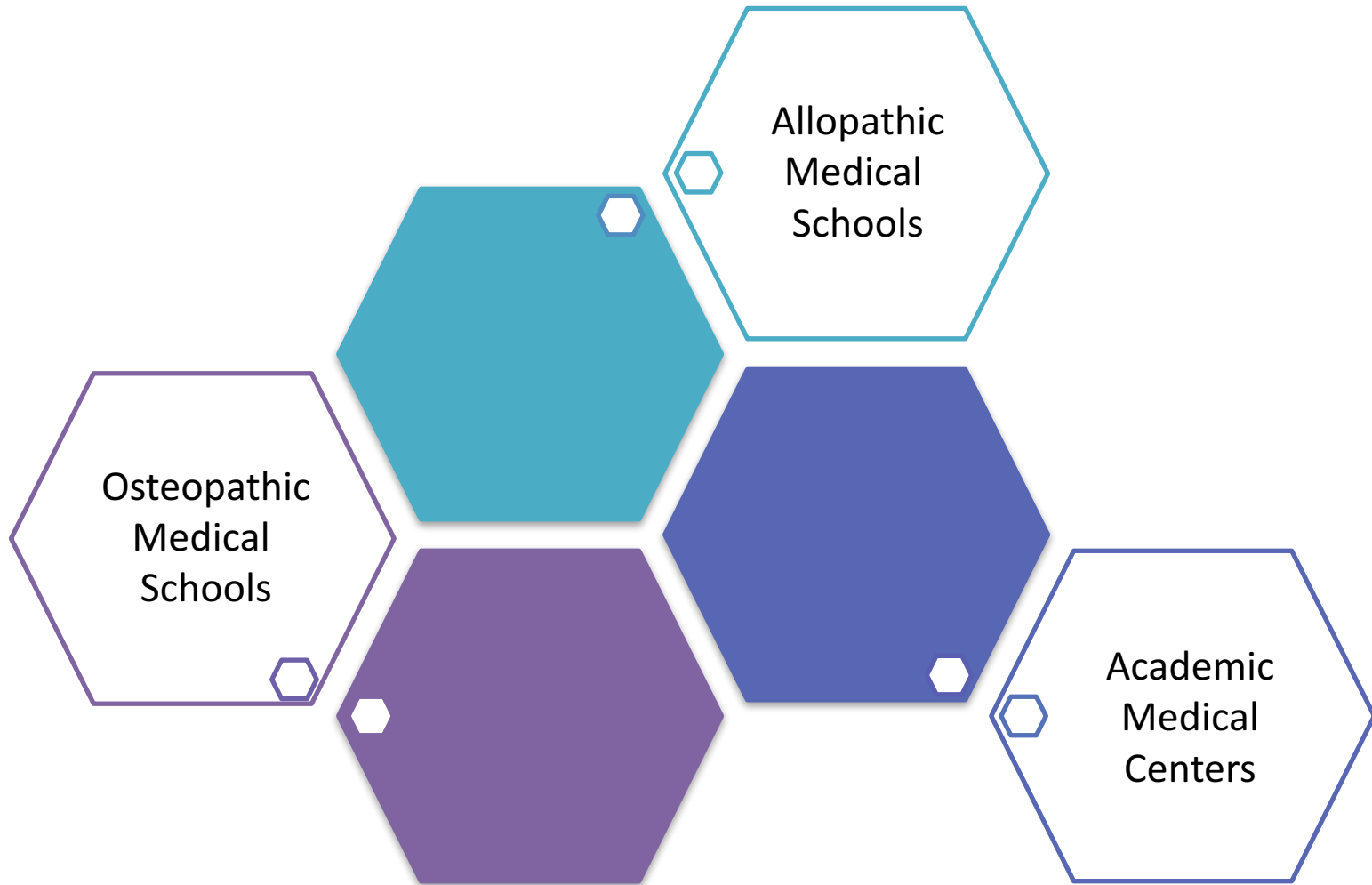
 @prof\_dasgupta



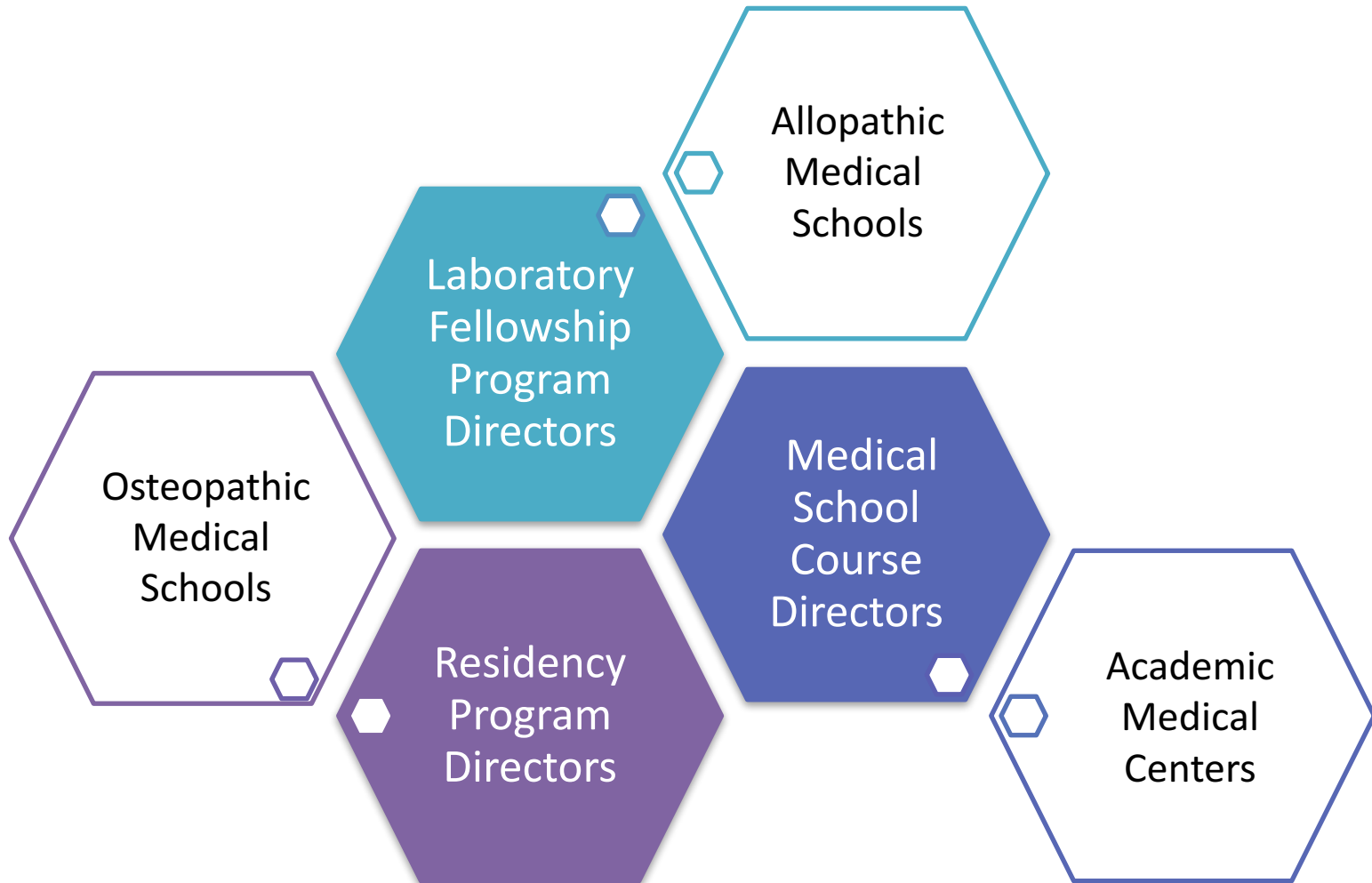
# Association of Professors of Human and Medical Genetics

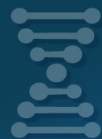
Mission: To promote human and medical genetics educational programs in North American medical and graduate schools

# APHMG Institutional Members



# APHMG Special Interest Groups





# GENETIC TESTING

NHGRI FACT SHEETS

genome.gov

## APHMG Medical Genetics Course Directors and ISCC:

*Principles  
of Genetic  
Testing -  
shared  
goals in  
education*

### Genetic Tests Can Help to:



**Diagnose Your Disease**



**Pinpoint Genetic Factors That Caused Your Disease**



**Predict How Severe Your Disease Might Be**



**Choose the Best Medicine and Correct Dose**



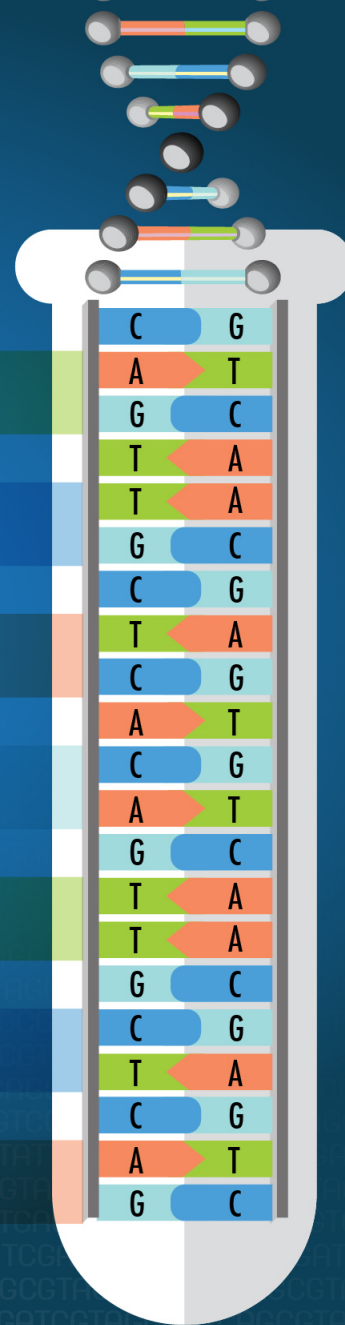
**Discover Genetic Factors That Increase Your Disease Risk**



**Find Genetic Factors That Could Be Passed to Your Children**



**Screen Newborns for Certain Treatable Conditions**





# GENETIC TESTING

NHGRI FACT SHEETS

genome.gov

## APHMG Medical Genetics Course Directors and ISCC:

*Medical  
School Core  
Curriculum in  
Genetics\* /  
ISCC  
Competencies  
Working  
Group*

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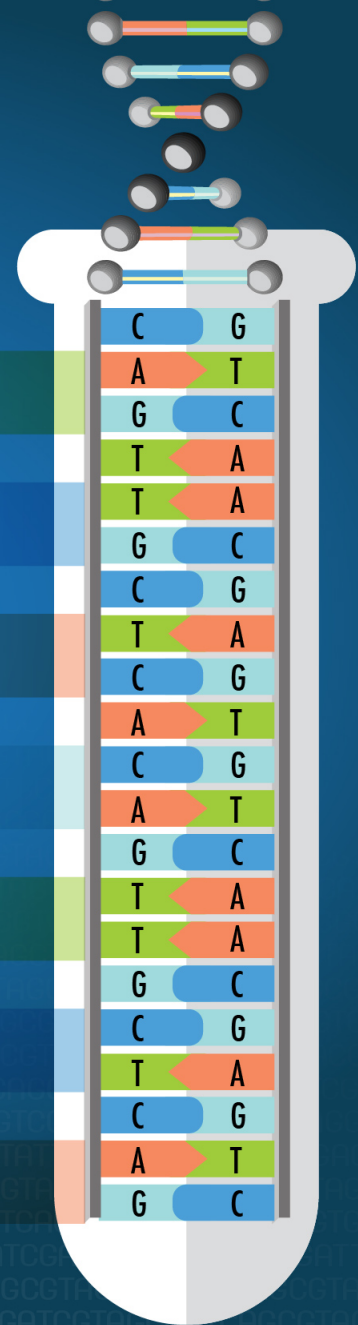
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\*[http://media.wix.com/ugd/8707df\\_d30054823cd945299424eb91046c1302.pdf](http://media.wix.com/ugd/8707df_d30054823cd945299424eb91046c1302.pdf)

## Training future physicians in the era of genomic medicine: trends in undergraduate medical genetics education

Jevon Plunkett-Rondeau, MD, PhD<sup>1</sup>, Katherine Hyland, PhD<sup>2</sup> and Shoumita Dasgupta, PhD<sup>3</sup>

- Examines methods of teaching medical genetics in US and Canadian allopathic medical schools
- Makes recommendations for training a genomically-literate physician community

# Training future physicians in the era of genomic medicine

**Table 1** Course director and learner characteristics of medical genetics courses taught in US and Canadian medical schools, 2013–2014

Course director and learner characteristics	Respondents, <i>n</i> (%)
Expertise of course/curriculum director <sup>a</sup>	
Geneticist with PhD	40 (39)
Geneticist with MD	33 (32)
Basic and clinical sciences team	23 (23)
Expert in other (nongenetics) discipline	23 (23)
Genetic counselor	3 (3)
Clinical sciences team	1 (1)



# Training future physicians in the era of genomic medicine

**Table 2** General characteristics of medical genetics courses taught in US and Canadian medical schools, 2013–2014

Course/curricular characteristics	Respondents, <i>n</i> (%)
Year of curriculum in which majority of genetics content was taught	
First	77 (75)
Second	8 (8)
Equal split between first and second	16 (16)
Third	0 (0)
Fourth	0 (0)
Medical genetics incorporated into third- and fourth-year clinical teaching	
Yes	27 (26)
No	58 (57)
Not sure	17 (17)

# Training future physicians in the era of genomic medicine

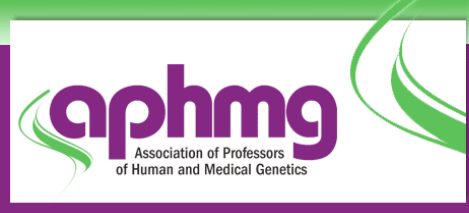
**Table 2** General characteristics of medical genetics courses taught in US and Canadian medical schools, 2013–2014

Course/curricular characteristics	Respondents, <i>n</i> (%)
Type of course	
Stand-alone	25 (25)
Integrated	77 (75)

## Training future physicians in the era of genomic medicine: trends in undergraduate medical genetics education

Jevon Plunkett-Rondeau, MD, PhD<sup>1</sup>, Katherine Hyland, PhD<sup>2</sup> and Shoumita Dasgupta, PhD<sup>3</sup>

- Need to advocate for curricula to continue to evolve alongside genomic science
- Impact of integrated curricula on teaching of genetics concepts?
- Genetics and genomics are underrepresented during clinical years of training – opportunity for synergy with ISCC and other organizations with initiatives to educate (non-geneticist) physicians



## CD SIG Activities

- Genetics Education Resource Exchange
  - Question bank
  - Cases, sample lab reports, etc.
  - Video review
- Best practices in Medical Genetics Education
  - Strategies for active learning
  - Team-based learning and flipped classroom tutorials
  - Peer evaluation and mentoring of teaching
  - Participatory Genomic Testing as an Educational Experience (Trends in Genetics, June 2016)
- Workshop Activities
  - Competencies working group
  - Case development / writing in genomic medicine
    - Session at ASHG 2016
  - Mentoring for scholarly project design



## APHMG CD SIG Partnerships

- NIH/NHGRI ISCC (Inter-Society Coordinating Committee)
- ClinGen Education Workgroup
- ABE (Association of Biochemistry Educators)



# APHMG CD SIG Partnerships

– ABE (Association of Biochemistry Educators)



23rd Annual Workshop &  
Special Interest Groups Meeting  
**MAY 09–12, 2017**  
**Clearwater Beach**  
**Florida**  
[www.aphmg.org](http://www.aphmg.org)



**SAVE THE DATE**



# APHMG CD SIG Partnerships

– ABE (Association of Biochemistry Educators)



- Developing Cases and Assessments for Integrated Biochemistry and Genetics/Genomics Curricula
- Strategies for Including Ethics in Integrated Medical Curricula
- Introducing Genetics Content into Clinical Education



## APHMG CD SIG Partnerships

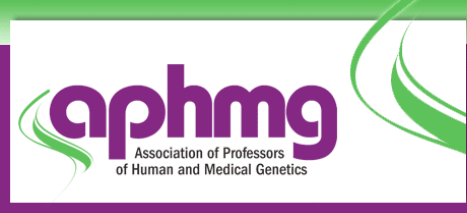
- NIH/NHGRI ISCC (Inter-Society Coordinating Committee)
- ClinGen Education Workgroup
- ABE (Association of Biochemistry Educators)
- IAMSE (International Association of Medical Science Educators) MedU Science
- UTRIG (Training Residents in Genomics) medical school teaching committee: focus on cancer cases
  - Rich Haspel





## APHMG CD SIG Future Directions

- Ongoing efforts:
  - Genetics Education Resource Exchange
  - Joint meeting with ABE in 2017
- Looking forward:
  - Curriculum management & integration of content across four (especially clinical) years
  - Developing materials with ClinGen Education Workgroup and UTRIG
  - Applying EPAs to competencies and creating associated assessments



# APHMG CD SIG Initiatives

<i>We have active programs addressing provider genomic literacy – here’s what’s working</i>	We are developing and planning programs addressing provider genomic literacy – Here’s what we are doing and what we need	We are not addressing provider genomic literacy – here’s why and what, if anything, we prioritize to change that
Genetics Education Resource Exchange	APHMG 2017 Annual Workshop	Materials for clinical (clerkship) training
Curricular resources	Resource development	Context of genomics in specialty care beyond Medical Genetics itself
Questions, case materials (PBL, TBL, small groups), sample clinical test reports, news articles for teaching	Integration of genetics/genomics with biochemistry, introduction of ethics, creation of clinical training materials	Operational difficulties in having genetics educators embedded in other clerkships
Includes assessment materials for trainees	Draft cases and assessments in these areas	Are these areas assessed on shelf exams?
Created by and for APHMG members	Created by attendees, to be deposited in GERE	SEEKING VOLUNTEERS!
Currently available to members	May 2017	Future direction, ASAP



# Thank you!

Jon Bernstein, Stanford  
Kate Garber, Emory  
Shoumita Dasgupta, Boston U  
Andrew Sobering, St. George's  
Darrel Waggoner, Chicago  
Kathy Hyland, UCSF  
Tracey Weiler, Florida  
International U  
Vicki Park, UTHSC

