



# ARC: Building Awareness, Respect and Confidence through Genetics

PIs: Marnie Gelbart<sup>1</sup>, Ting Wu<sup>1</sup>, and Elizabeth McMillan<sup>2</sup>

<sup>1</sup>Personal Genetics Education Project (pgEd), Department of Genetics, Harvard Medical School, Boston, Massachusetts

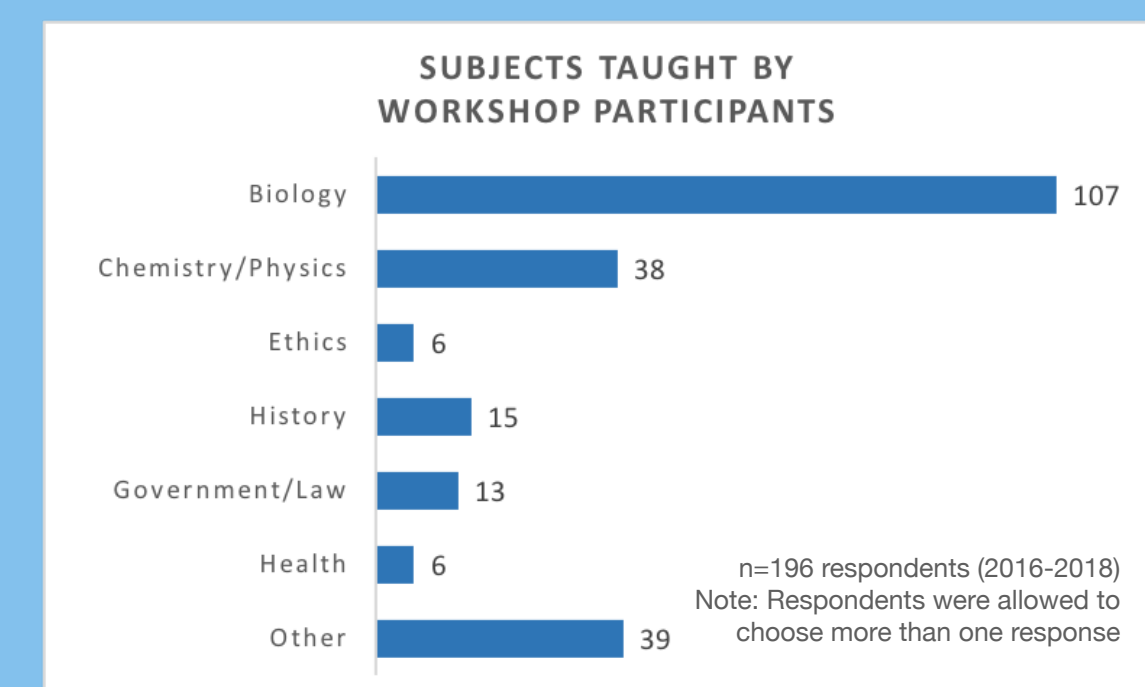
<sup>2</sup>The Sanford Program for the Midwest Initiative in Science Exploration (PROMISE), Sanford Research, Sioux Falls, South Dakota

## Project Objectives:

### Awareness

#### Develop and provide teacher PD workshops.

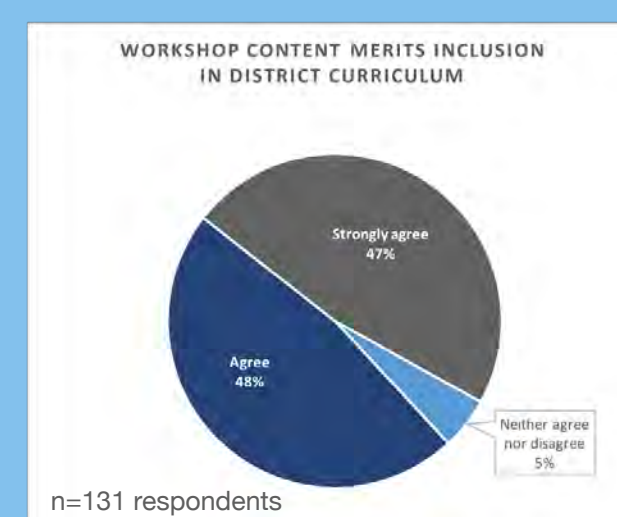
Since 2016, pgEd has offered 12 professional development workshops in both urban and rural communities. Participation in these workshops has almost tripled during this time.



pgEd, PROMISE & the Collaborative Research Center for American Indian Health  
Sioux Falls, SD



pgEd Teacher PD - Sioux Falls, SD



These participants reach **over 17,000 students annually**, and teach various disciplines, not just biology

#### Here's what teachers have to say about pgEd PDs:

"The PGED workshop was one of the best professional development workshops I have attended because of its interdisciplinary approach to personal genetics, and combined focus on content and pedagogy."

"The teacher spotlights were great, to be able to hear about how, specifically, teachers are implementing these lessons. Also, having the opportunity to discuss and share with other teachers and professionals (your staff) in order to get multiple perspectives."

"The training was very innovative on the way they were able to tie in genetics with self identity and culture."

#### 2019 summer PD schedule:

June 18-21: Sacramento, CA	July 10: Boston, MA
June 23-28: Brunswick, ME	July 16-18: Huntsville, AL
June 25: Omaha, NE	July 22-25: Kerrville, TX
June 27-28: Sioux Falls, SD	

Our workshops are offered in partnership with SEPA projects at The Jackson Laboratory, HudsonAlpha, Texas A&M, and the University of Nebraska Medical Center.

### Respect

#### Build curriculum that supports respectful discussion of genetics, identity, and diversity.

##### Resources developed:

- Lesson Plans
  - Genome editing and CRISPR (2017)
- Mini-lessons
  - Birth of CRISPR-edited twins (2019)
  - Sickle cell disease and genetic engineering (2017)
  - NFL and genetic tests at the stadium (2017)
- Info briefs
  - Sex, gender and genetics (2019)
  - The common thread: What genetics tells us about ancestry, health, and personal identity (2018)



#### Existing resources transformed to be more inclusive

##### Examples:

- Inclusion of Tuskegee and Diné stories
- Incorporation of gender-inclusive language

##### Resources being developed:

- Genome engineering and the world around us
- Informed consent in the genomic age
- Sex, athletics, and human variation
- Ancestry, race, and DNA: Health implications
- Complex measurements: Intersection of genes, environment, and intelligence

## Join the conversation:



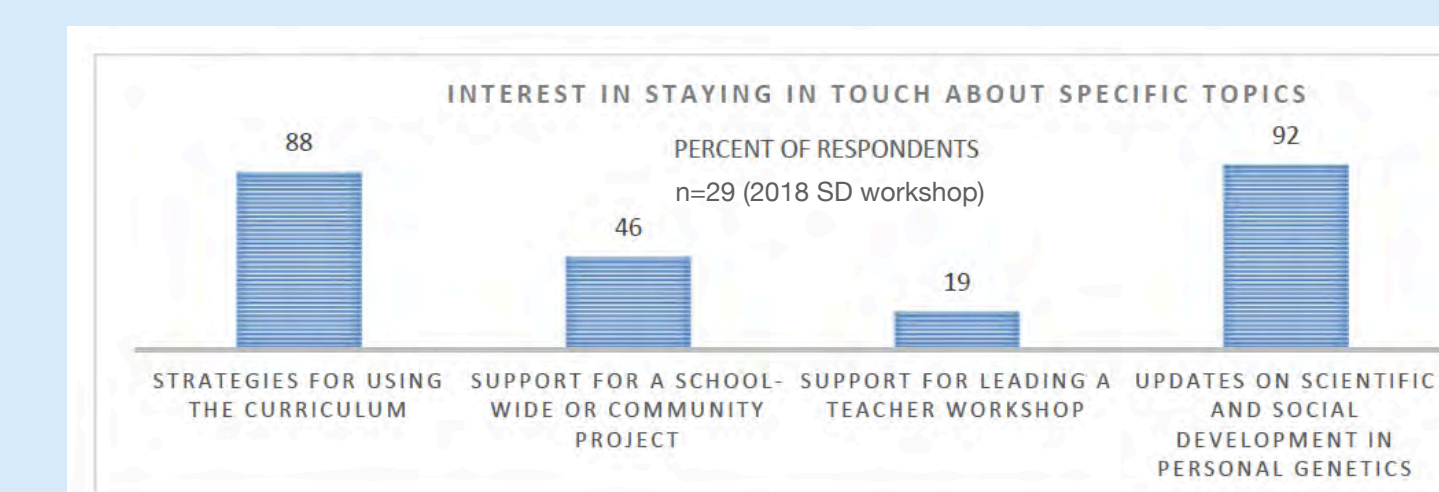
[www.pgEd.org](http://www.pgEd.org)

@pgEDorg

### Confidence

#### Build a professional learning community to empower teachers and support their continued professional development.

- Time is the most frequently cited barrier by teachers
- Teachers want to stay in touch with pgEd after attending a PD
- Teachers are sharing pgEd materials with their colleagues
- Teachers take the lead
  - Teacher spotlight sessions at Sioux Falls PD
  - Brockton High School sex and gender curriculum planning workshop
  - Curriculum integration day at 2019 Sioux Falls PD



#### Integrating personal genetics into school and community:

The End-of-Year survey of prior workshop participants was administered during the summer of 2018. **Of the 39 respondents who integrated pgED materials into their school, most (80%, n=31) are "likely" or "extremely likely" to continue to do so.**

## Acknowledgment:

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## Who is pgEd?



Johnny Kung, Mohammed Hannan, Dana Waring, Robin Bowman, Nadine Vincenten, Vika Parris, Florcy Romero, Marnie Gelbart, PI, Ting Wu, PI



Cindy Wijma, Evaluator Bayha Group



Liz McMillan, Sanford PI

## A diverse array of programs amplify ARC's impact



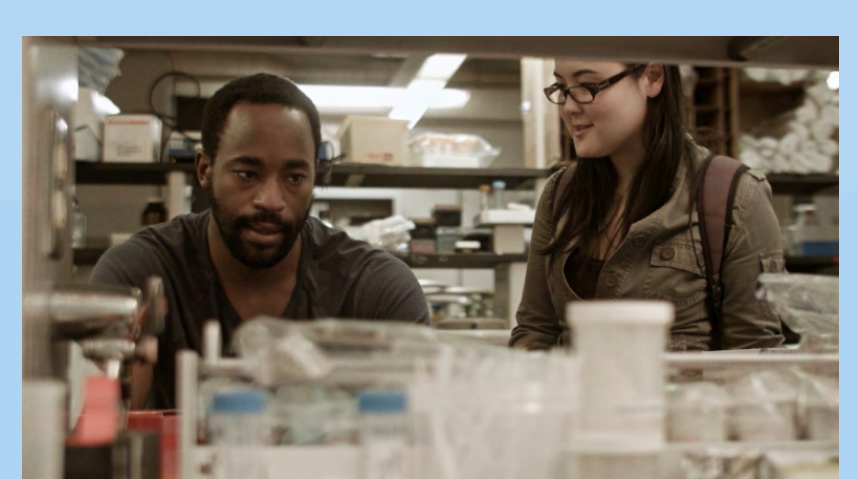
**CONVENING STAKEHOLDERS**  
CRISPRcon (Boston, MA - June 2018)



**LIBRARIES**  
STEAM Expo (Newton Public Library, Newton, MA - Sept 2018)



**YOUTH GROUPS**  
Teen Ambassador Summer Program (Cambridge, MA - August 2018)



**TELEVISION & FILM**  
ANYA (feature film, anticipated release, Fall 2019)



**COMMUNITIES OF FAITH**  
Intercampus summit on gene editing (Azusa Pacific University, Azusa, CA - June 2018)



**CONGRESSIONAL BRIEFINGS**  
The Common Thread: What Genetics Tells Us about Ancestry, Health and Personal Identity (Washington DC - May 2018)



**TEACHER CONFERENCES**  
National Association of Biology Teachers (San Diego, CA - November 2018)