Welcome to the National Girls Collaborative Project Webinar:

*Increasing Equity and Diversity in the STEM Workforce: Issues and Strategies*

Thank you for joining us! We will begin at 11:00 AM Pacific/ 2:00 PM Eastern.
Webinar Agenda

• NGCP Overview
• Understanding the Issue
• Successful Diversity Efforts
• SPECTRUM Resources
• BlackGirlsCode Overview & Resources
• Question and Answers
• Get Involved & Wrap Up
NGCP Vision

The National Girls Collaborative Project (NGCP) brings together organizations that are committed to informing and encouraging girls to pursue careers in science, technology, engineering, and mathematics (STEM).
Access to Shared Resources
Equity
Rock Stars, Deficit Models, and Stereotype Threats: Learning to See Inequity in Science and Strategies for Addressing It

Kimberly D. Tanner, Ph.D.
Associate Professor, Department of Biology
San Francisco State University
Director, SEPAL, kdtanner@sfsu.edu
I. For Your Consideration: Rock Stars of Science…

Sample advertisement portraits from the 2009 Rock Stars of Science campaign by Geoffrey Beene Gives Back. (Photo credit: Geoffrey Beene Gives Back, GQ, and Ben Watts, Photographer)
I. For Your Consideration: Rock Stars of Science…

Sample advertisement portraits from the 2009 Rock Stars of Science campaign by Geoffrey Beene Gives Back. (Photo credit: Geoffrey Beene Gives Back, GQ, and Ben Watts, Photographer)
I. For Your Consideration: Rock Stars of Science…

What do you notice about the photographs from the Rock Stars of Science Campaign?

What messages might these images send to young people?

Sample advertisement portraits from the 2009 Rock Stars of Science campaign by Geoffrey Beene Gives Back. (Photo credit: Geoffrey Beene Gives Back, GQ, and Ben Watts, Photographer)
I. For Your Consideration: Rock Stars of Science...

There are 11 scientists featured.
All 11 appear to be male.
All 11 appear to be white.

“It kind of says that women and people of color are more likely to be rock stars than scientists, huh?”
– undergraduate woman of color

Sample advertisement portraits from the 2009 Rock Stars of Science campaign by Geoffrey Beene Gives Back. (Photo credit: Geoffrey Beene Gives Back, GQ, and Ben Watts, Photographer)
What are the pressing issues in promoting diversity in the sciences?

The persistent problem of…

**INDIVIDUAL DEFICIT MODELS**

versus

**INSTITUTIONAL DEFICIT MODELS**

Sample advertisement portraits from the 2009 *Rock Stars of Science* campaign by Geoffrey Beene Gives Back. (Photo credit: Geoffrey Beene Gives Back, GQ, and Ben Watts, Photographer)
The dearth of people of color in the sciences is the result of…

- Students of color had poor K-12 science education and general educational preparation
- Students of color lack of experience in basic laboratory research
- Students of color have financial constraints that cause them to have to work instead of engaging in all that science has to offer
Common Assumptions in the Sciences

The dearth of people of color in the sciences is the result of...

- *Students of color* had poor K-12 science education and general educational preparation
- *Students of color* lack of experience in basic laboratory research
- *Students of color* have financial constraints that cause them to have to work instead of engaging in all that science has to offer

This is **INDIVIDUAL DEFICIT MODEL Thinking**...
II. For Your Consideration: Questioning Deficit Models

The Experiences of Graduate Women of Color in Biology

Carol Umanzor, M.S. Biology
San Francisco State University
Science Education Partnership Assessment Laboratory (SEPA)
Advisor: Kimberly Tanner

NCRR SEPA #R25 RR24307-01
Representation of Biology Women of Color

Women of color at SFSU make up:

• 33% of all graduate students in biology
• 42% of all undergraduate students in biology
• 15% of all biology faculty
II. For Your Consideration: Questioning Deficit Models

Interview Population of Graduate Women of Color in Biology

- Latina: 50% (n=11)
- Black/African Islander: 23% (n=5)
- Asian Pacific Islander: 27% (n=6)

Total n= 22
II. For Your Consideration: Questioning Deficit Models

What hurdles do graduate women of color in biology report facing?

<table>
<thead>
<tr>
<th>Subtheme</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensions with Identity</td>
<td>21 out of 22, 95%</td>
</tr>
<tr>
<td>Collisions with the Culture of Science</td>
<td>19 out of 22, 86%</td>
</tr>
<tr>
<td>Financial Issues</td>
<td>8 out of 22, 36%</td>
</tr>
</tbody>
</table>
“My perception before was eventually I was going to have to change who I was to fit into science.”

- Jennifer
II. For Your Consideration: Questioning Deficit Models

The Power of Presence: Influence from People of Color

“I think the presence of people of color in general has helped being a biology student, a researcher [and] a graduate student, all of those things, having people of color has helped me see that these things are achievable.”

-Lorie
An Ethic of Caring Matters to Graduate Biology Women of Color

“It’s important to feel that the person that’s helping you is genuinely interested in helping you. It’s not whether they’re a certain color.”

-Mia
II. For Your Consideration: Questioning Deficit Models

Questioning Assumptions in the Sciences

The dearth of people of color in the sciences may relate more to...

- Faculty and institutions have expectations that students of color would/could/should abandon their personal identities for a science identity
- Faculty and institutions perpetuate cultural homogeneity in science and what is culturally expected to be successful in science
- Faculty and institutions maintain a disconnect between basic scientific research and applications to the community
- Faculty and institutions have made limited progress in increasing the diversity of faculty role models in the sciences
II. For Your Consideration: Questioning Deficit Models

Questioning Assumptions in the Sciences

The dearth of people of color in the sciences may relate more to...

- **Faculty and institutions** have expectations that students of color would/could/should abandon their personal identities for a science identity.
- **Faculty and institutions** perpetuate cultural homogeneity in science and what is culturally expected to be successful in science.
- **Faculty and institutions** maintain a disconnect between basic scientific research and applications to the community.
- **Faculty and institutions** have made limited progress in increasing the diversity of faculty role models in the sciences.

This is INSTITUTIONAL DEFICIT MODEL Thinking...
II. For Your Consideration: Questioning Deficit Models

Increasing Access to Rare Role Models

From Us To Us:

Advice on Careers in Biomedical Sciences for Girls & Women of Color:

“Can women be a scientist and have a family too?”

“Why should I consider becoming a scientist?”

“What is the thing that you like most about science?”

“Is science real?”

“When you were in school did you have any teachers that influenced you to get into science?”

“What is the thing you like most about science?”

“When and why did you decide to become a scientist?”

“I want to study science. Do you have any advice?”

“Have you ever gotten confused or frustrated when you do science?”

“Have you ever felt that you were treated differently because you were a girl?”

“Have you ever failed a science class?”

Women of Color Doing Biomedical Science:

Inspiring Stories from Women of Color Biomedical Researchers
II. For Your Consideration: Questioning Deficit Models

Increasing Access to Rare Role Models

From Us To Us:

Advice on Careers in Biomedical Sciences for Girls & Women of Color

“Can women be a scientist and have a family too?”
“Why should I consider becoming a scientist?”
“What is the thing that you like most about science?”

“Is science real?”
“When you were in school did you have any teachers that influenced you to get into science?”
“What is the thing you like most about science?”
“When and why did you decide to become a scientist?”

“Have you ever felt that you were treated differently because you were a girl?”
“I want to study science. Do you have any advice?”

“Have you ever gotten confused or frustrated when you do science?”

Women of Color Doing Biomedical Science:
Inspiring Stories from Women of Color Biomedical Researchers
II. For Your Consideration: Questioning Deficit Models

Increasing Access to Rare Role Models

From Us to Us: Advice on Careers in Biomedical Science for Girls and Women of Color

*Please click on the questions below to listen to answers by women of color scientists!*

- When and why did you decide to become a scientist?
- What is the thing that you like most about science?
- When you were a girl did you see yourself as a scientist?
- Is science real?
- Have you ever felt you were treated differently because you were a girl?
- Have you ever felt you were treated differently because you were a girl of color?
- When you were in school did you have any teachers that influenced you to get into science?
- What was life like during middle school? What was high school like for you?
- Have you ever failed a science class?
- Have you ever gotten confused or frustrated when you do science?
- Can women be scientists and have a family too? How does that work?
- Why should I consider becoming a scientist?
- I want to study science. Do you have any advice?
- Wait! So, what are the students from the video doing now?

http://www.sfsusepal.org/programs/spectrum/spectrum-videos/
III. For Your Consideration: Stereotype Threat

Claude Steele, Ph.D.
Dean, Stanford School of Education
Professor, Department of Psychology

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III. For Your Consideration: Stereotype Threat

III. For Your Consideration: Stereotype Threat

Whistling Vivaldi and Other Clues to How Stereotypes Affect Us

Claude M. Steele

2010
Teaching to Combat Stereotype Threat...

Feature
Approaches to Biology Teaching and Learning

Moving Theory into Practice: A Reflection on Teaching a Large, Introductory Biology Course for Majors
Kimberly D. Tanner
Department of Biology, San Francisco State University, San Francisco, CA 94132

Order Matters: Using the 5E Model to Align Teaching with How People Learn
Kimberly D. Tanner
Department of Biology, SEPAL: Science Education Partnership and Assessment Laboratory, San Francisco State University, San Francisco, CA 94132

Approaches to Biology Teaching and Learning: Understanding the Wrong Answers—Teaching toward Conceptual Change
Kimberly Tanner* and Deborah Allen†
Rock Stars, Deficit Models, and Stereotype Threats: Learning to See Inequity in Science and Strategies for Addressing It

Kimberly D. Tanner, Ph.D.
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San Francisco State University
Director, SEPAL, kdtanner@sfsu.edu

SEPAL
The Science Education Partnership & Assessment Lab
San Francisco State University
Black Girls CODE
Changing the face of Technology
SUMMER OF CODE
BLACKGIRLSCODE 2012

black girls CODE
imagine-build-create.

CHICAGO | ATLANTA | ST. LOUIS | DETROIT | LOS ANGELES | OAKLAND | SAN FRANCISCO
Women and girls of color are vastly underrepresented in the technology industry and are being left behind as participants in the burgeoning innovation economy.
Black Girls CODE is a non-profit organization founded in April 2011.

We deliver technology workshops to girls from underrepresented communities ages 7-17 and provide access to role models and mentoring in a culturally sensitive setting.
MISSION

Our mission is to empower young women of color between the ages of 7-17 to embrace the current tech marketplace as builders and creators by introducing them to skills in computer programming and technology.
# The Team

**Kimberly Bryant, Founder/Executive Director**
- Engineer, 20+ years experience in biotech and pharma industries, Social entrepreneur

**Abby Bobe, Marketing and Social Media Manager**
- MBA, Nonprofit Management & Socially Responsible Business, Mills College

**Volunteers**
- Over 900 volunteers from the fields of media, tech industry, and education field from around the country
Why CODING MATTERS

- Women earn 57% of all undergrad degrees but only 18% of those in CS; Black women only 3% CS degrees; Latinas less than 1%.
- If technology is designed mostly by half of our population that’s male, we’re missing out on the innovations, solutions, and creations that 50% of the population could bring.
Why CODING MATTERS

- Computing jobs are amongst the fastest growing and highest paid positions in our economy.
- By 2020 there will be more than 1.4 million computing-related job openings. (U.S. Dept. of Labor)
- We can only fill about 30% of those jobs with U.S. computing bachelor's grads at current rates.
Teach 1 million girls to code by 2040
CURRENT CHAPTERS

- Atlanta
- Chicago
- Detroit
- Las Vegas
- New York
- Memphis
- Oakland
- San Francisco
We Launched In South Africa
Stories of Success
Girls enjoy “pairs programming” and team projects.
Consistent “peer to peer” and “teacher to student” feedback works...
Small TA/mentor to student ratios and female mentors help.
"When you teach a woman, you teach a nation."
African proverb

future@Blackgirlscode.com
http://facebook/BlackGirlsCodeOrg
Twitter: @BlackGirlsCode
Questions?
Get Involved
Get Involved

NGCProject
@ngcproject
Follows you
Advancing K-12 Girls in STEM through Organizational Networks, Collaboration, and Discourse.
United States · ngcproject.org

3,223 Tweets
563 Following
1,916 Followers

Followed by TXGCP, Teaching STEM, STEMinst and 37 others.

Tweets

NGCProject @ngcproject
Latest @DesignSquad Mission Solar System guide teaches kids how @NASA is able to land safely on Mars. ow.ly/ozORp

16h

NGCProject @ngcproject
Bridging Afterschool & Informal Science Communities - webinar from @informalscience 9/10/13 at 1 PM EDT ow.ly/oz3rmz
Get Involved

Building the Capacity of STEM Practitioners to Develop a Diverse Workforce

In This Issue

NGCP Updates ~ Collaborative Network Activities ~
Champions for Collaboration ~ FabFems Spotlight ~
Upcoming STEM Events ~ Resources ~ Global Resources

NGCP Updates

NGCP Webinar: Increasing Equity and Diversity in the STEM Workforce: Issue and Strategies
Thursday, September 26, 2013; 11:00 AM - 12:00 PM Pacific/2:00 PM - 3:00 PM Eastern
at this webinar, participants will gain a better understanding of the issues that impede efforts to
diversify the STEM workforce and learn strategies that promote equity, fairness, and diversity. Dr.
Kimberly Tanner, Director of the Science Education Partnership and Assessment Laboratory (SEPAL)
will present findings from research on why talented individuals leave the biological sciences, as well as
elements of successful efforts and problematic attempts towards diversifying the biological sciences.
Kimberly Bryant, Founder of BlackGirlsCode, will present information on the racial and socioeconomic
divide and resources for computer science programs.

NGCP Blog

The NGCP Blog features timely posts about topics relevant to encouraging girls to pursue STEM
areers. Recent entries highlight STEM summer camps for girls -- a useful resource for educators
Contact Information

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