Yale Ciencia Academy for Career Development

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Science has a Retention Problem

- Not just a pipeline problem
- We need to ensure all students are setup for success

Challenges for Retention

• Challenges of underrepresentation:
  - Lack of role models (Karunanayake & Nauta 2004)
  - Isolation, impostor syndrome, stereotype threat & disengagement (Hurtado et al., 2009; Trujillo & Tanner 2014)
  - Stigmatizing experiences, microaggressions, biases, etc. (Chavous et al 2018, Colón-Ramos & Quiñones-Hinojosa 2016)
• Deficits in mentoring relationships and networks, career guidance, and professional development opportunities (Thomas 2007)
• Tension between personal values and culture & expectations of academia (Gibbs & Griffin 201, Estrada 2011)
Value of Networks: CienciaPR

- Geographically dispersed network of >10,500 scientists
- Community + Career Advice + Scientist-led Outreach
Year-long, national cohort program, to:
1. Define and advance career & professional development goals
2. Build resiliency and self-reliance

Through:
- Supportive & diverse peer community & network
- Training and conversations to address common gaps in professional development
- Guided science outreach opportunities

www.cienciapr.org/yca
#yaleciencia2019, #yalecienciacademy
A Supportive Peer Community

In-person kick-off meeting and online Peer Mentoring Chats
Career Discussions

- **Conversations with Scientists**
  Moderated discussions with inspirational diverse scientists about milestones and careers

- **Workshops** - Transferable skills important for success across popular careers

- **Individual Development Plan**
  Personalized advice from YCA staff for career advancement
Science Outreach

• Student-designed projects
• Practice communication and leadership skills
• Harmonize social and scientific identities
YCA Fellows

Applications

Accepted

Year

≥6th
5th
4th
3rd
2nd
1st

Career Interests

K-12 teaching
Science policy
Other
Industry
Academic teaching
Academic research

N=154

Neurosci. 23%
Cancer 16%
Cell & Molecular 15%
Microbiol. 12%
Health Sci. 9%
Psychol. 8%
Immunol. 6%
Bioeng. 3%
Other Disease 3%
Evol. 1%
Other 3%
Disease 3%
Evol. 1%

1st
2nd
3rd
4th
5th
≥6th

United States

15
63
68
78
107
134
Impact: All Metrics

3 cohorts, n = 105, Wilcoxon Signed-Ranks Test or McNemar

Cultural Identity
Science Identity
PD Self-efficacy
Prof. Dev. Practices
Mentors & Networks
Career Expectations
Grad Sch. Environ.
Academic Produc.
Program Goals

POST  PRE
Community Support

PRE: How helpful have your training experiences been in providing the following?

POST: How helpful has YCA been in providing the following?

• Access to informative, knowledgeable and inspirational role models
  - PRE=3.09, POST=4.79, p≤0.000

• A supportive peer community
  - PRE=3.27, POST=4.79, p≤0.000

What aspects of having access to a peer mentoring group were most beneficial?
“YCA was the first time I found a peer group in STEM that wasn’t entirely made up of white people. I was able to identify with so many of my fellows on many issues other than just being a scientist.”

“Being able to share our good and bad experiences in a "judgement free" environment. Being able to understand that I am not the only one going through struggles in grad school.”

“It is hard to meet people who look like you and grew up like you did who are now in science. I think it gave me confidence to know that there are many of us.”

“YCA introduced me to an amazingly diverse cohort of scientists of color that became my support community. This program consistently provided me with the confidence to push through the challenges of graduate school. If not for this program, I may have succumbed to the unique challenges that graduate students of color struggle with during graduate training.”
Did you get any training/orientation before YCA on how to use the IDP to develop your career goals and objectives?

What aspects of the IDP training and career discussions were most beneficial?

“My program did not require us to have an IDP. This was my very first experience at completely organizing myself academically and this exercise helped me think on my future career. It helped me through my thesis proposal experience, which has been my biggest academic challenge so far.”

“YCA provided me with year round resources and workshops on all aspects of career development. It really broaden my horizons to consider all the career possibilities after receiving the PhD.”

“The primary way was helping me organize my plans and ideas using specific goals that I was able to track. For example, I wanted to be part of the INRO program, so I set a plan for this and ended up getting a postdoc at NIAID.”
Career Advancement

PRE: How helpful have your training experiences been in providing…?
POST: How helpful has YCA been in providing the following?

• Know how to use an IDP to identify and work towards goals  
  - PRE=2.52, POST=4.46, p≤0.000
• Know how to improve mentoring relationships  
  - PRE=2.75, POST=4.56, p≤0.000
• Skills to assist me in making for career decisions  
  - PRE=2.60, POST=4.59, p≤0.000

Agree/Disagree, PRE/POST

• I have a clear idea of the career I want  
  - PRE=3.53, POST=3.77, p≤0.024
• I know what I need to do to achieve my preferred career  
  - PRE=3.33, POST=4.02, p≤0.000
• I understand the strengths and weaknesses in my professional preparation  
  - PRE=3.71, POST=4.06, p≤0.000
• I can find and talk to people who can advise me about my career goals  
  - PRE=3.75, POST=4.42, p≤0.000
Outreach

• 100 science outreach projects
• ~16,780 people reached
• Variety of activities:
  - Blog posts
  - Newspaper articles
  - Podcasts
  - Lesson plans
  - School visits
  - Public lectures
  - Workshops at conferences
  - Networking events
  - Clubs
  - Websites, etc.
Outreach

PRE: How helpful have your training experiences been in providing...?
POST: How helpful has YCA been in providing the following?

- Know how to communicate science effectively to a range of audiences
  - PRE=2.67, POST=4.15, p≤0.000
- Assuring me scientists have an important role in society
  - PRE=3.45, POST=4.83, p≤0.000

Agree/Disagree, PRE/POST

- I consider myself “a scientist”
  - PRE=4.21, POST=4.41, p≤0.004
Outreach: Examples

Angel

- Interested in industry
- After Nature article started social media presence
- SMDP and KGI ASCB Fellow
- Has industry position lined-up

Marcos

- Interested in academic research
- Organized vaccine science café at local library
- Health communications following hurricane María
- Postdoc at NIH

Angel

- Interested in academic teaching
- Designed neuroscience lessons for high school students
- Published results in peer-reviewed journal

Neysha

- Interested in industry
- After Nature article started social media presence
- SMDP and KGI ASCB Fellow
- Has industry position lined-up
Lessons Learned

• Peer communities & role models – Establish cross-departmental groups or leverage resources like CienciaPR, NRMN, SACNAS, etc.

• Career advancement – Implement training on effective use of IDP + independent advising as part of professional development offerings

• Outreach - Encourage opportunities for students to develop skills, while building their scientific identity
Thank you!

**Instructors:**
- Boyd Branch (Community & Networking)
- Cynthia Fuhrmann (IDP)
- Chris Pfund & Kermin Martínez (Mentoring)
- Tracie Addy & Beth Luoma (Inclusive Teaching)

**Panelists:**

**Mónica Feliú-Mójer, PhD**
*(iBio & CienciaPR)*

**Training Co-Director & Science Outreach Lead**

**Janet Desmarais, BS**

**Project Coordinator**

**Mark Graham, PhD & Melanie Bauer, MA**

**Evaluators**