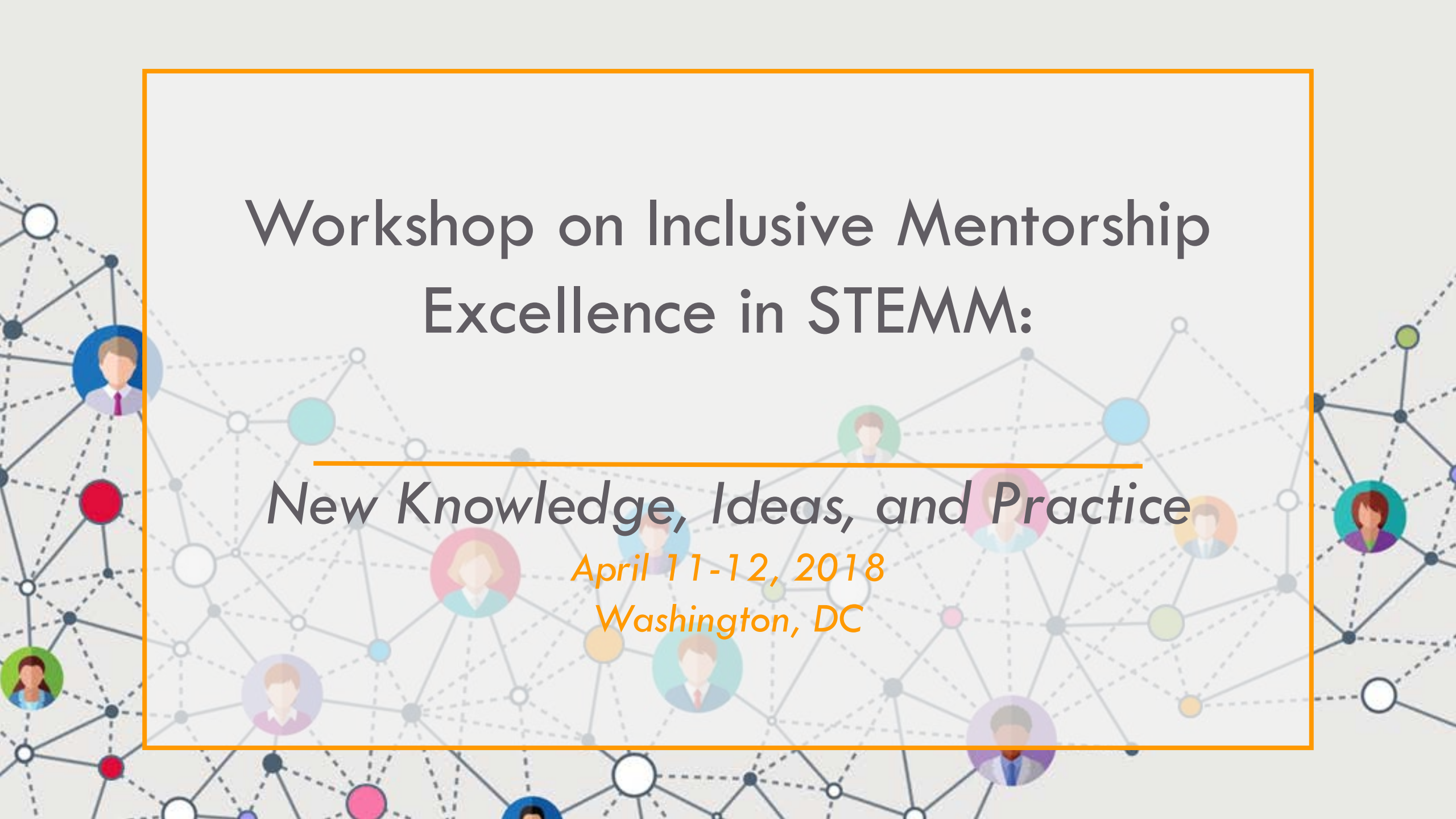




Workshop on Inclusive Mentorship Excellence in STEMM:

New Knowledge, Ideas, and Practice

April 11-12, 2018

Washington, DC

Scientific Study of Research Mentoring:

A Deeper Investigation of What Matters in
Mentoring Relationships and the Factors that
Impact Persistence

Mentoring relationships are the incubating space in which emerging scientists are developed and the future scientific workforce is forged.

The research mentoring relationship is the primary mechanism for growing the next generation of scientists.

A National Focus on Mentoring



- ▶ **National Science Foundation (NSF)**

- ▶ Post-doctoral mentoring plans
- ▶ Undergraduate research AND mentoring programs
- ▶ AAAS/ PASEMEN STEM Mentoring 2030 Meeting



- ▶ **Sloan Foundation**

- ▶ University Centers for Exemplary Mentoring

HHMI

- ▶ **Howard Hughes Medical Institute**

- ▶ Mentor and mentee training program for Gilliam Scholar Programs



- ▶ **National Institutes of Health (NIH)**

- ▶ Mentored K awards
- ▶ Individual development plans (IDPs)
- ▶ National Research Mentoring Network (NRMN)



- ▶ **National Academies of Science**

- ▶ New Report on Mentored Undergraduate Research Experiences
- ▶ Participatory Workshop on Effective Mentoring in STEMM
- ▶ Consensus Study

Participatory Workshop on Effective Mentoring in STEMM: Practice, Research, and Future Directions

February 9-10, 2017

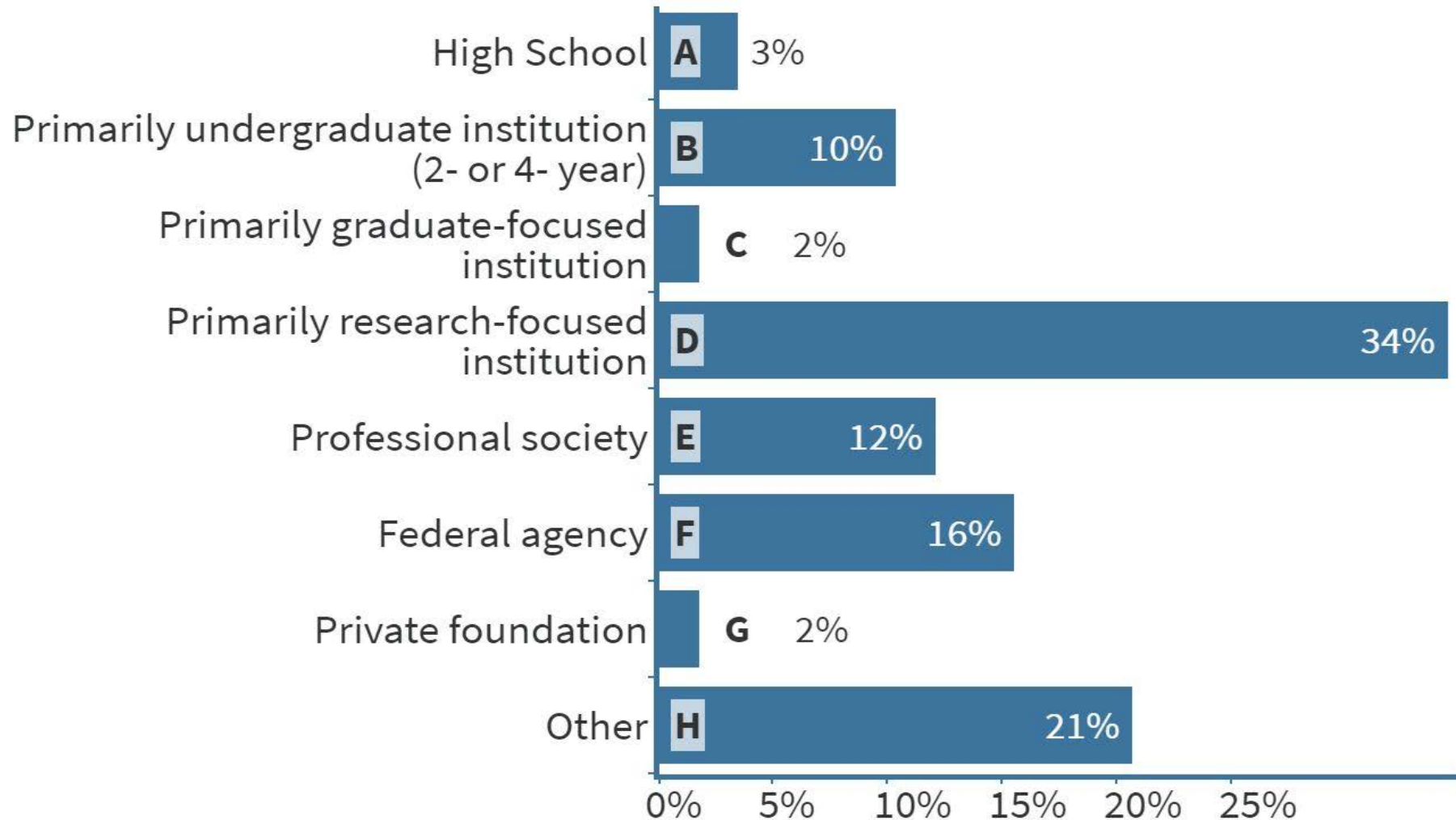


The conference was sponsored by the National Academy of Sciences' Board on Higher Education and Workforce (BHEW), with funding from the National Math and Science Initiative.

Focused on:

- identifying successful evidence-based practices and metrics for mentoring students in STEMM career pathways.
- identifying the evidence supporting the most successful mentoring practices for women and students of color across high school and postsecondary education.

Attendees: 120 total attendees with 27 speakers



What Participants were Interested in Discussing (Day 1)



NAS Study: THE SCIENCE OF EFFECTIVE MENTORING IN STEMM

The Need...

Science, technology, engineering, mathematics, and medicine (STEMM) fields reflect the people who participate in them. Strong mentorship is critical in the development of undergraduate and graduate students in STEMM—especially for many members of historically underrepresented populations.

The Goal....

Ensuring that mentors and mentees are educated and trained with the evidence-based knowledge and skills necessary to ensure highly productive and sustainable mentoring relationships

NAS Study: THE SCIENCE OF EFFECTIVE MENTORING IN STEMM

The Charge...

- Study STEMM mentoring programs and practices at the undergraduate and graduate levels
- Identify evidence (or lack thereof) regarding successful programs for mentoring of individuals traditionally marginalized in STEMM fields
- Answer questions, such as:
 - What are common definitions and differentiations among various models of mentoring in STEMM?
 - What are the most successful elements of effective mentoring relationships in STEMM education at the various stages of career development?
 - How can and should mentees and mentors be trained to be more effective in mentoring relationships?

Study Outcomes:

- Issue a final report and create an online interactive guide of effective programs and practices that can be adopted and adapted by institutions, departments, and individual faculty

Expected Structure for the Next Two Days

Listen

to the invited framing talks
on approaches, metrics, forms, and
interdisciplinary perspectives

React

in your assigned breakout team
facilitated by committee members

Identify

gaps in the knowledge,
leading edges for inquiry, and
key research questions

Landscape Survey and
Critical Literature Review

Some Tools Available for You

The Science of Effective Mentoring, Workshop 1 Website

<https://sites.google.com/view/science-of-mentorship-ws1>

- Agenda
- Participant List
- Speaker bios and Discussion Documents
- Committee information
- A form to submit resources
- Breakout Group Team pages★

The Facilitator and the Scribe

- Committee members and Staff
- Will keep the breakout sessions on track and on time
- Will document the Team discussion
- Will report out tomorrow
- Can help answer logistical questions



The Breakout Session Teams

TEAM A

- Renetta Tull *
- Joe Alper *
- Erika Brown
- Leo Morales
- Carol Muller
- Jamie White

TEAM B

- Angela Byars-Winston *
- Fred Lestina *
- Keshia Ashe
- Christine Grant
- Hiro Okahana
- Christiane Spitzmueller
- Rena Subotnik

TEAM C

- Juan E. Gilbert *
- Christine (Chris) Pfund *
- Lillian Eby
- Amanda Field
- Racquel Jemison
- Suzzane Ortega

TEAM D

- Richard (Rick) McGee *
- Keivan G. Stassun *
- Nora Dominguez
- Janis Kupersmidt
- Iris Wagstaff
- Maggie Walser
- Jodi Yellin

TEAM E

- Sylvia Hurtado *
- Alex Helman *
- Fay Cobb Payton
- Becky Packard
- Colette Patt
- Linda Pololi
- Steven Wallace

TEAM F

- Joe (Skip) G.N. Garcia *
- Laura Lunsford *
- Maha Khalid
- William Massey
- David May
- Renita Miller
- Mercedes Rubio

The Goals of the Breakout Sessions

1. “Quick Download” about the framing talk
2. Identify examples, studies, or ideas related the presentation and discussion document
3. Identify established areas and gaps in the knowledge
4. Discuss what might be the leading edges or the next big thing
5. Think about what this suggests for future research questions

The “Three D’s”

DEVELOPMENTAL STAGES

Acknowledges the unique needs and experiences within as well as between career stages that require different types of mentorship, including critical transition points, attrition during STEMM career pathways, and the emergence of new mentorship needs.

Undergraduate

Early Career

DISCIPLINES

Acknowledges the variety of cultures across STEMM disciplines that shape expectations of trainees, academic/career benchmarks, evaluation criteria for what constitutes success, content of mentorship experiences, and forms of mentoring typically available.

Biology

Computer Science

Psychology

DOMAINS

Acknowledges the multiple individual difference and contextual factors that shape attainment, attrition, advancement, performance, persistence, etc., in the academic and career development of individuals in STEMM fields.

Diversity and Inclusion

Workforce

Mental Health

Final Output for the Four Breakout Sessions

- Identify 2 Knowledge Gaps, 1 Leading Edge, and 1 Research Question for each of the “Three D’s”

TEAM A NOTES

Your Role as a Contributor

DO:

- Listen to others thoughtfully
- Share your comments, ideas, insights regardless of how (un)formed they may be
- Write down questions raised

DON'T:

- be hesitant to ask questions
- be hesitant to challenge ideas, comments, issues raised

PLEASE:

- Take advantage of the breaks to interact with people outside of your Team
- Use your name badges to identify participants who focus on various Disciplines, Developmental Stages, and Domains
- Contribute resources (publications, program materials, data, contact information) via the form on the website.

Next Steps for the Committee

- Synthesize and review the information collected during this workshop and through a “traditional” literature review
- Commission 3 papers to explore some of the identified gaps
- Workshop 2 – Irvine, CA October 8-9, 2018: presentation of the commissioned papers and further discussion
- Listening Sessions at Professional Society Meetings throughout the coming year
- Develop an online guide for mentors, mentees, and program facilitators

The Committee on the Science of Effective Mentoring in STEMM



Angela Byars-Winston (Chair)

University of Wisconsin–Madison

Erin Dolan

University of Georgia

Joe (Skip) G.N. Garcia [NAM]

University of Arizona College of Medicine–Tucson

Juan E. Gilbert

University of Florida & iAAMCS

Sylvia Hurtado

University of California, Los Angeles

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Joe Alper, Consultant Writer

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