

Advancing livestock genomics education and research in developing countries using strategies from the Virginia Tech PREP and IMSD training programs.

1996 ISAG: significant advance in minority participation since this photo (thanks to ISAG)



The plan for ISAG: “*new folk can't be expected to just ~know~ something*” ...the goal for increasing participation of developing countries scientists in genomic research

WHAT IS MENTORING?



(often) You cannot be what you cannot see....

Scientific journeys: reflections by URM and female scientists:

<https://www.youtube.com/watch?v=sma0GdLFBNU>

- Doing science while black;
Edward J. Smith *(I was very fortunate to start my journey as a scientist through a brief postdoc in a lab led by an amazing (female) scientist)*

Science 30 Sep 2016:
Vol. 353, Issue 6307, pp. 1586

Alumni return to talk on campus and network with current trainees: Lt. Cmdr. Dr. Rolanda Findlay in 2016



If we eat together, you are less likely to kill me” says...**An old Korean proverb**

Start them young The “new” ACES: Science as well as production...embrace impossible meat?



Research/Science Education programs: R25s

- **VT PREP: 2004-** continuously funded Postbac program
- **VT IMSD: 2008-** continuously funded prebac and predoc programs
- Innovative training programs introduced to the dept/college/univ:
 - Peer- and near-peer mentoring (mentoring skills acquired by senior students)
 - Grant writing: created a course...first F31 (NIH Fellowship) at VT and 11 subsequent participants have received fellowships
 - student-driven mentor selection through lab rotations

R25GM066534-14A1: The Virginia Tech Postbac Research and Education Program

- Our unique and impactful research and education program plan includes distinct activities that target three overlapping phases of each trainee's tenure, which we define as the **“moving in,” “moving through,”** and **“moving out”** phases. During the “moving in” phase, 8 trainees “who need a PREP” will be recruited and assigned to mentors using our **proven strategy that is “scholar-driven”** and combines mentor qualities such as prior experience, which has resulted in a **98% retention** for each of our 3 funding cycles.
- **\$409,537 annually or ~2.1 Million for five years**

5R25GM072767-11: VT Initiative to Maximize Student Development (2017-22)

- our successful **interdisciplinary Initiative for Maximizing Student Development (IMSD)** program for pre-doctoral (graduate) and pre-baccalaureate (undergraduate) students from groups underrepresented in careers in the biomedical and behavioral sciences. Our training program is **a partnership with departments** and interdisciplinary graduate programs which takes advantage of Virginia Tech's (VT) history of excellence in Engineering and the Behavioral and Life Sciences. With lessons learned in the last eight years, we will continue **to recruit across disciplines** and from diverse geographic areas and institutions. From the first cycle, 2007-12, a total of 23 pre-doctoral students participated in the VT IMSD program. A total of 16 (or 69.5%) have completed and received the PhD degree
- **Total Year 1: \$467,489.**

Elements of our research ed training program.....

Cohort approach to graduate education: “Lucky 13”



**Networking opportunities:
“Fab16”@ABRCMS2018**

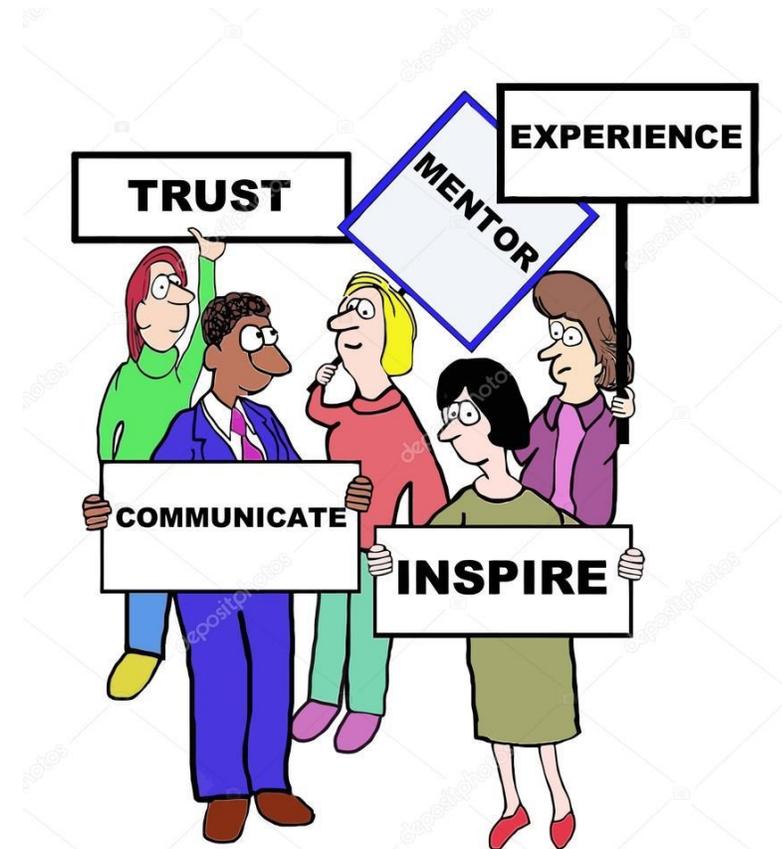


Proposal: leverage ISAG Travel Bursaries

- Moving In: recruiting and (**before**) arrival.....at ISAG
- **Moving Through (@ISAG meeting)**: beyond the “**Plenary sessions**”:
Travel Bursary Recipients be given an opportunity for a “**Cohort meeting with speakers**”
 - speakers become collaborators with travel bursary recipients
 - speakers become “potential hosts” for short-term training or “Study Leaves” or “Sabbaticals” including: Fulbright etc. (I have hosted 4: resulted in publications of impact)

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WHAT IS MENTORING?



A plan for ISAG bursary winners to impact URM

- **Moving Out:** coordinated by ISAG and “host team”
 - Cohort photo (2019 ISAG Travel Bursary Recipients, for example)
 - Create a “connection of bursary recipients”: peer- and near-peer mentoring among travel bursary recipients
 - Encourage “continued networking post-ISAG” among:
 - Cohort members
 - Travel bursary recipients and “Linked ISAG speakers”

Post-ISAG

- Assessment: feedback from bursary recipients
- Encourage “social media” participation by recipients
- Add recipients to “listservs” new or old to maintain connection and share “opportunities”
- Bring back “Bursary Recipient Alumni” as “speakers” at ISAG
- Encourage “inter-cohort” connections

Goal: Undergraduate programs

- Recruit students who will graduate
- Our graduates pursue diverse careers
- Our alumni return to interact with current trainees and provide a fdn for improving our programs

Do a lot of eating to “build and sustain a community”



A regional organization of PREP& IMSD

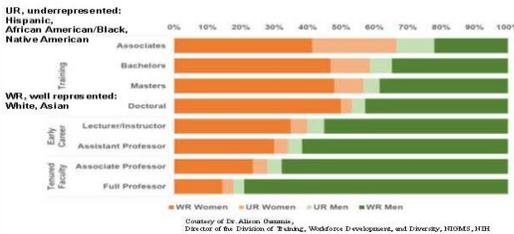
Regional Partnership Among Training Programs Benefit Trainee Networking and Program Success

Sarah E. Golding^{1*}, Joshua D. Hall^{2*}, Erin R. Banks³, Paige E. Cooper³, Justine M. Johnson⁵, TanYa M. Gwathmey⁶, Laundette P. Jones⁷, Laura Kasman⁸, Katherine L. Wilson⁹ and Edward J. Smith¹⁰. *presenting authors.

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The Challenge

Women and individuals from underrepresented groups are leaving the biomedical academic pathway



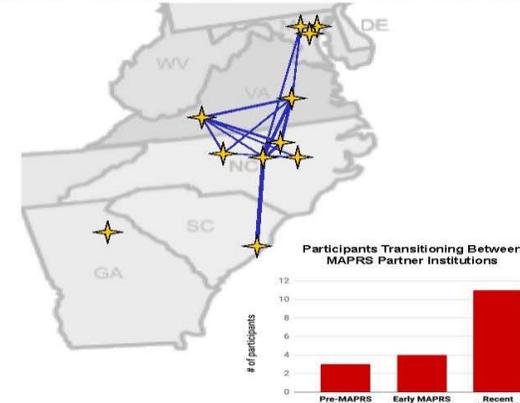
The Intervention

Formation of a regional partnership with a shared mission:

To mentor, train, and promote the next generation of researchers in biomedical and behavioral sciences, and to enhance this training by creating opportunities to communicate and network with geographically proximal programs.



Regional Partnerships Lead to Increased Opportunities for Participants at Partner Institutions



The Outcomes



2013 - 2019 MAPRS Meetings

- 11 partner schools
- 6 regional meetings
- 7th planned for May 2019
- ~120 students, faculty, program directors attend annually
- 12 Outstanding Alumni Awards
- 18 Best Poster Presentation Awards
- ~300 Poster Presentations
- Group photo from 2018 MAPRS Meeting at Duke University

Student impacts

- More opportunities to present research
- Friendly supportive environment which boosts confidence
- Beginnings of a professional network
- Job opportunities
- Community of like-minded peers

Faculty/Program Director impacts

- Sharing of best practices
- Professional development
- Scholarship/Collaboration
- Advise when dealing with tough situations
- Community of like-minded peers

"MAPRS is truly a community with transcendent values and goals"
Quote by MAPRS Faculty member

Institutional impacts

- Stronger relationships with partner schools
- Recruitment at all levels Pre-Doc, Post-Doc, and Faculty
- Removal of GRE requirements

The Lessons Learned

Successful Partnerships require....

- Enthusiastic and committed PIs and program leaders
- Committed institutions
- Creativity
- Channels of communication

Benefits of Partnerships...

- Increased awareness of opportunities for trainees
- Increased community and strengthened peer network for both program directors and trainees
- Shared ideas and creativity among programs strengthens all programs

Outcomes from our PREP and IMSD alumni: 70
PhDs, 1 MD, 1 JD, 29 MS, 1 Dpharm since 2004

Peer-, and near peer mentoring

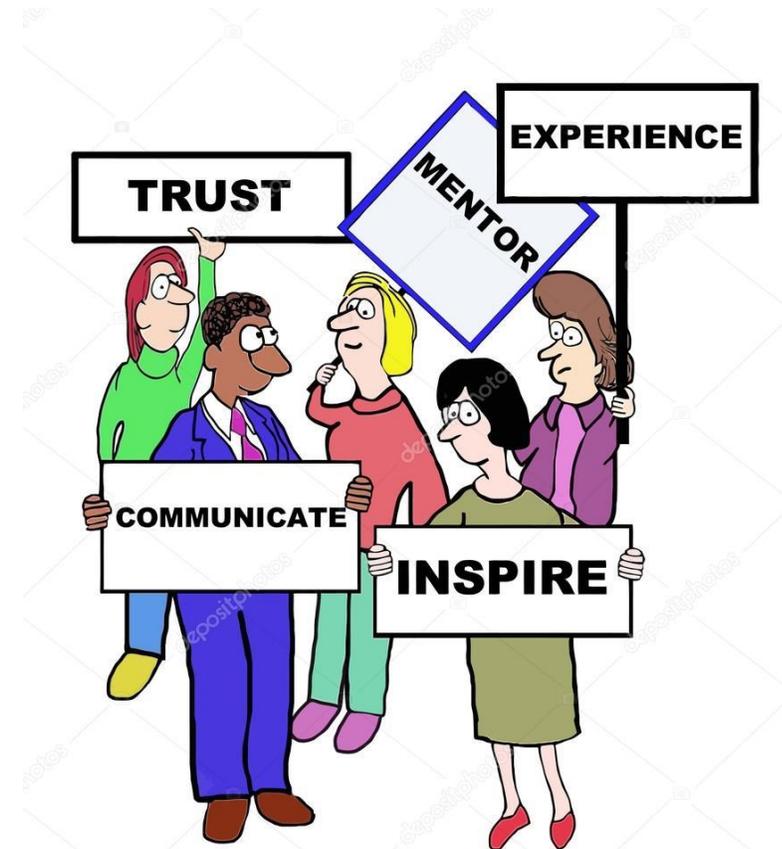


We've created a regional consortium:
MidAtlantic PREP & IMSD Regional Symposium
(more **mentors & opportunities**)



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Conclusion: anxiety remains about participation in genomics.....

- ***The long walk to African genomics;***
- Tucci & Joshua in *Genome Biology* 2019**20**:130
- <https://doi.org/10.1186/s13059-019-1740-1>
- **Published: 27 June 2019**
- ISAG has an opportunity to change that
- **Our approach at Virginia Tech could be a model for ISAG**