Summary Report

NAASC IN PLANTA workshop INclusive Practices Leveraging Arabidopsis as a Nexus for Training and Application
Tuesday, 21 June, 2022 during ICAR 2022-Belfast, in-person and online.

Workshop Discussion Topics & Facilitators

Workshop Description

Organizers: Cris Argueso (NAASC, Colorado State University), Joanna Friesner (NAASC), Adrienne Roeder (NAASC, Cornell University) & R. Keith Slotkin (NAASC, Danforth Center, University of Missouri-Columbia). Virtual organizers: Dior Kelley (NAASC, Iowa State University) & Jennifer Nemhauser, (NAASC, University of Washington, Seattle)

Research and training using Arabidopsis have been vital to the success of plant science for decades due in large part to the vast community of researchers, resources, datasets, and techniques generated by the plant science community that have been extensively used. To ensure that Arabidopsis continues to be valuable to science and society, a robust, self-renewing community is necessary. To accomplish this, we must prioritize activities that are inclusive and will support a diverse community, and that highlight the utility of Arabidopsis tools, techniques, education, and resources to research and training. The North American Arabidopsis Steering Committee (NAASC) is holding an interactive workshop at ICAR 2022 to engage in community discussions that focus on using Arabidopsis as a tool for research, training, and teaching; and for community engagement and support. Discussion groups will be facilitated and will include consideration of these questions among others: What features of specifically Arabidopsis make it particularly well-suited to improve inclusiveness? What strengths can we leverage? Are there ways for the community to provide input to NAASC in the future, to help shape NAASC community-supportive activities? Following introductory framing, workshop participants will select a discussion group to brainstorm and share ideas on new and innovative practices and activities as well as identify current challenges and barriers and actions that could remove or reduce them. Facilitators will loosely follow an "I-CARE" structure (I-CARE: Introduction, Challenges, Actions, Results, Evaluation); there will be flexibility for discussants to direct the conversation's focus. Discussion groups will report out to the larger group at the conclusion of the session so that participants can benefit from other conversations. The workshop will draw on these ground rules/expectations and we will briefly review them in the workshop introduction: https://www.achievemorellc.com/blog/dialogue.

Expected outcomes: a written workshop report will be provided post-ICAR. NAASC will consider this input when planning future grant proposals to support community priorities and ICAR 2024- San Diego, the next scheduled North American ICAR. There will be opportunities for continued future engagement on these and other community-supportive topics including by those unable to attend this session.

1. Arabidopsis as a tool for Research, Teaching & Training

Adrienne Roeder, Facilitator

Challenges:

- The broader scientific community & the public are not aware of Arabidopsis as a research and teaching tool.
- Awareness of just how much has been done in crops has been translated from Arabidopsis and the potential for future translation.
- Keeping up with new techniques (biosensors)
- Resources are scattered (for teaching)

Actions:

- Present timelines for the role of Arabidopsis in plant discovery (like the COVID vaccine timelines).
- Update to Cell 2007 paper on how Arabidopsis underlies health.
- Build a centralized website that contains links to all the teaching tools because they are dispersed (ABRC, Plant Cell Teaching Tools, etc).
- Workshops to train on new techniques--inclusive of all career stages (could be virtual but want some hands- on training--data analysis etc.)
- Promote interactions between different disciplines & networking--interdisciplinary conferences. (Sometimes put on by funding sources-grant awardees, interdisciplinary conferences, within biology, social sciences, engineering).
- #ArabidospsisAlumni hashtag on twitter for people who have come out of Arabidopsis labs with PhDs to tell about their career paths and what they are doing now (industry, datascience, etc. beyond academia).
- Poster flash talks for more students to present at ICAR2024.
- Networking opportunities between people working with Arabidopsis and crop plants to co-apply for funding.
- Once a month regional happy hour over zoom (e.g., ASPB midwest section does this, include PUI institutions, ability to come to conference depends on early career professional)
- Highlight student papers every couple of months virtually--allow students to present on zoom. Not as technical to highlight students.
- For cohort building at ICAR: grad student games one afternoon--quiz show like game with elimination rounds. They do this at an Entomology conference.

Results:

- Increased grant funding for Arabidopsis research
- Attendance and participation at ICAR, Increased number of Arabidopsis centric-topic at ASPB and other plant biology meetings.
    - These can be evaluated quantitatively

2. Outreach to & Connection with Diverse Academic Institutions

Terri Long, Facilitator

Introduction

- Institutions as examples of diverse academic institutions, mainly focused on US institutions since four of us were from the US, minority serving institutions (MSIs), but maybe not so clear to people from outside the US as they don't necessarily exist or may not be defined in the same way:
    - PUIs (primarily undergraduate institutions)
    - HBCUs Historically Black Colleges and Universities (Side note: TAIR grants free access to HBCUs) Many are land-grant institutions, focused on agriculture which has pluses and minuses for Arabidopsis.
    - There can be a tension with interactions with major research institutions, as many of the best students may be lured away to larger, majority-serving institutions
    - Hispanic serving institutions
- How can the Arabidopsis community facilitate interactions and develop collaborations with MSIs?

Advantages of Arabidopsis

- Requires minimal resources to work with it, so for teaching and for research. Great path via Arabidopsis as a teaching tool.
- Greenhouses are expensive, so Arabidopsis has an advantage over many crops in that regard, for both teaching and research, as many small institutions don't have resources to maintain a greenhouse.
- What about working in silico - computational methods and classes?
- Teaching materials exist from stock centers that can benefit teaching.
- There are many natural accessions that can be used for analyses or mutant screens could be done.
- Regulatory requirements are lower for using Arabidopsis than crops (like, transgenics in particular).

Challenges

- Disadvantage for using Arabidopsis: for research purposes, the low hanging fruit have been picked - that is, easy genetic screens have been done. But maybe creativity can address this?
- Many HBCUs have an agriculture focus where Arabidopsis may not sell well.
- How to cure lack of "plant awareness"?
- How to address the status gap with biomedical research? Need more role models of successful scientists. One challenge might be to more clearly present agricultural careers, at all types and levels, as successful career options that are in demand, and Arabidopsis is a stepping stone.
- How to build interest in Arabidopsis among students at these diverse institutions, that may support collaborations, build interest etc?
- How can R1 universities make connections with diverse institutions?
- How can diverse institutions attract and retain good students and postdocs? This is a big problem for many.
- If the geography is close, people can have a role at two institutions: R1 and a smaller institution, to potentially bridge the gap. The disadvantage mentioned above is that they may spend more time at the institution with more resources, which is typically the majority-serving institution.
- Many institutional structures exist in other countries (outside of the US), probably with similar challenges.
- Financial barriers exist and support systems can be a challenge for students who are working further away.
- Researchers may be able to take advantage of funding opportunities aimed at minority-serving institutions.
- There is a major problem of historical underfunding of HBCUs due to systemic racism. How to address this?

- How to find the science that is being done at some of the more diverse institutions? That is, the science may be happening, but without broader awareness - maybe the researchers are not well plugged into the community.

Actions

- Online seminar series of diverse scientists doing science. Royal Society's example of pairing students with successful scientists, and also more students, could be done by Zoom.
- TikTok as a way to connect diverse scientists to students, an avenue to grow more plant biologists, making students aware of the possibilities and career options.
- YouTube - example of an astrophysicist explaining the topic to all levels: kindergarten to up and even to postdocs.
- Discover advertising opportunities - how to make sure that students know what resources are available? Always a challenge since there are so many.
- Teachers, careers: Good teachers are key and were a common ingredient for recruiting us into plant biology.
    - Engage more faculty and bring them together with teachers to develop opportunities.
    - Career options - show students the diversity of careers and people who are in them. This is done at many colleges, but how to get Arabidopsis into those? Maybe this would focus more on plants.
- Establish more equal partnerships between researchers and HBCUs.
    - Better funding of collaborations between R1 and minority-serving institutions?
- Promote broader impacts that are successful to grow funding from funding agencies, by showing them the potential.
- In the UK, the Wellcome Trust funds collaborative projects in Africa - fellowships between institutions in countries or continents that need to build their science, like Africa or South America.

Evaluation

- How to evaluate outcomes of the above?
    - What is the impact on the partner institution? Are there students who are choosing to go into STEM careers - challenging but possible?
    - Countable items - posters and presentations.
    - How do you assess why people left the field so that you can address those problems? If we aren't aware of them, we can't address them.
- What does success look like?
    - A more diverse community that reflects the demographics of society, in all respects.
    - Measurements may have to span plant science, not just Arabidopsis, because people may work on several systems, using Arabidopsis as a tool.
    - Maybe Arabidopsis can help us to understand orphan crops.
    - The Arabidopsis community might be a model for other plant (crop communities).

3. Developing community cohorts and networks for personal and professional success

Ross Sozzani, Facilitator

Introduction

- What is a cohort?
    - A group with a common factor whether that would be shared experience, a shared vision or technical expertise
- How do you build a cohort?
    - Choose a theme, a shared purpose, shared experience, or identify your needs or the needs of others
    - Have a strongly defined purpose
    - For example people at ICAR that haven't got anyone to socialize with might need help to bring together, or need to be "adopted" in order to have a great ICAR experience
    - Choose a size – keep it small or else it becomes a network
    - Create diversity
    - Have shared activities

Challenges

- A lack of commitment or time or that different members of the group have different levels of commitment. You need to identify the benefits of the cohort in order to maintain motivation for committing to the cohort

Evaluation of success

- Retention rates
- Engagement
- Size of the cohort
- Maybe the cohort needs to become a network because the cohort is too big

Some cohort examples. –

- The weed stampede (started 2011 by NAASC and held at N. American ICAR, and also ICAR 2022-Belfast)
- Python beginners course that kept each other accountable
- First time at ICAR
- Legacy cohorts from labs

4. **Career Opportunities & Trade-offs: How to Prioritize?**

Siobhan Brady, Facilitator

<u>Executive Summary</u>

- What careers are available - please see the extensive list below
- Opportunities using Arabidopsis - many available resources facilitate rapid research; an excellent tool to study climate change given all of these.
- Challenges using Arabidopsis - It's not a crop and funding can be tricky for plant sciences.
- Challenges for K-12/undergrad/grad working on Arabidopsis - it's not biomed related and low interest from students because it is not relatable. Lack of plant awareness is real, and there are either few plant scientists entering teaching in K-12 or they are unable to have sufficient interest to use these resources
- Selling skills for industry- novel methodologies and data analysis skills, and the ability to connect complex processes for a more holistic approach
- Internships - more paid Arabidopsis-based internships (both national & international) would be great to highlight plant research as well as give people experience of industry or other career options and increase connections.

<u>What career opportunities using Arabidopsis are out there?</u>

University professor/lecturer
Legal roles, patent officer
Venture capital sector
Start-ups - what kind of applications are there for Arabidopsis? Fundamental research, biofactories.
Finding markers for selective breeding
Teaching tool - model organism
Database curation and data science
Government policy
Journalist
Non-profit organizations
Science communication, public engagement
Science editors/science writing/publication
Technician/senior scientist/'platform' leader

<u>What are opportunities presented by working with Arabidopsis to career options?</u>

- Broad spectrum, easily transferable
- Complementation studies
- Less ethical barriers
- Good teaching tool for genetics, stress responses etc. lots of resources available for this. Can use to teach big concepts for a variety of ages
- Lots of resources, plasmids, protocols, omics, mutants, well established gene models
- Collaboration - lots of people working with Arabidopsis
- Transformation, understanding the process and benefits of using Arabidopsis compared to other organisms
- It's not a crop - easy to handle and portable
- Research already carried out in Arabidopsis - lots of literature available. Model organism for studying quite a lot, you can perturb a lot of genes in Arabidopsis and still use it to study these processes
- Good for researching stress responses for looking into climate change
- Lots of technologies available to study in Arabidopsis
- Multicellular organism - can study development unlike with organisms such as yeast
- Relatively small communities that facilitate communication and collaboration
- Plants are beautiful - we should introduce more hands-on activities including plants in education

What are the challenges presented by working with Arabidopsis for career options?

- It's not a crop - problems with funding, applied research etc. Difficult to move into industry positions that require crop or breeding experience. Don't see tangible research outcomes like new crop species, not always tackling 'real-world' problems, e.g., food production.
- In the US there is not a lot of funding for it
- It's not an animal - trying to stimulate interest is difficult. Lack of plant awareness.
- Can't study domestication
- Can't use transgenics outside of a research setting
- Need more transparency within the community - it can be very competitive. Would be nice if more collaborative.
- Can't make cell cultures
- Difficult to work on other ecotypes, very Colombia heavy
- Technical challenges - very stress responsive, results can be very stochastic
- Lack of a cohesive framework - differences in results when same plants are grown slightly differently
- Emphasis is often on genetics

What might prevent K-12, undergrad or graduate students (on up) from wanting to work in Arabidopsis? What actions could address these challenges?

- Not a common tool used in school
- Human biology and biomed are much more popular - at all levels it just doesn't seem to appeal very much.
- Preferences for things students can relate to - people are always looking for something that relates to us.
- Less opportunities in plant science than biomedical?
- There should be more of a commitment teaching across kingdoms
- Funding availability is low - difficult to get internships or projects for students within plant sciences
- Very few people with plant science backgrounds move into teaching

How to sell your skills from Arabidopsis to industry.

- Use state of the art technology within Arabidopsis research
- Data analysis - there are lots of data in Arabidopsis research- researchers know how to handle data.
- Know how to combine results and connect complex processes - a holistic view of signaling.
- Key processes are conserved - knowledge transfer
- Time management for carrying out experiments, growing plants
- Learn how to communicate and present results - large amounts of data that we have are so well organized - we already have a good foundation of how to do things and apply to other areas.

Internships in industry advantages and disadvantages.

- All kinds of internships are useful
- Paid and unpaid - are unpaid internships good?
- International internships - experience other cultures and backgrounds
- More opportunities for internships would fulfill requirements for getting into postgraduate programs
- Way to experience different research areas, and the kinds of opportunities you can have in industry. Can help people decide whether to transfer to industry or other areas e.g. government

5. Making Mentorship Successful

Karolina Mukhtar, Facilitator

Executive Summary

- Recruiting/maintaining mentors/mentee can be challenging
- There need to be boundaries: time, what's expected (could be set up within universities to better train mentors)
- Mental health support (listening, coaching, providing info & resources for better support)
- Benefits to being a mentor- gain skills to be a good mentor- listening, approachable, non-judgmental, open-minded, patience, leadership.
- Mentors can provide guidance on how careers can progress including outside academic choices- mentees shouldn't feel unwelcome to discuss this
- Mentors can share survey information that it's common for people to leave academia and that it's ok/normal
- Benefits to mentees: gaining skills by listening to mentors' examples, gaining valuable insight, hearing different perspectives, developing stronger networks
- Coaching: guiding conversations to lead people to their own conclusions

Challenges

- High service demand for faculty members; trying not to over-extend potential mentors
    - Time boundaries & boundaries of what is expected in the mentor/mentee relationship will help
- Conflicts between mentors:mentees
- Sometimes, mentees (e.g., students) don't understand the roles of mentors & don't make good use of them.
- Faculty advisors are often assigned in this role but not given guidance on what they should advise on, and how to advise and provide useful advice. Also guidance on frequency of interactions to be effective for mentees.

Existing programs discussed

- Pool of available mentors that opt-in for speed-dating events
- New faculty- assigned as mentors and given specific mentees based on shared interest.
- PhD students: required to have a mentor, not required to be linked by interests/field. Mentors are 'safety person' for conflicts & issues with their PI/PD. Separate from the graduate advisory committee. Meet at least 1x/year.
- New faculty members: 3 person mentoring committee to address abusive mentorship relationships.

Features of a good mentor

- Listens
- Approachable
- Non-judgmental/ open minded
- Be an example
- Not too demanding on themself or their mentees
- Effective leadership skills
- Share your own experiences
- Few moments as a mentor will make you feel validated - wait for it (patience)
- Need to understand priority in tasks (what to advise mentees to spend more/less time on) - e.g., reports can be quick - grant proposals take time, etc.
- Know how to ask questions which will encourage the mentee to speak
- Be there when you are needed (one email away) - make your mentee comfortable
- Project what is waiting for them in the future - help them anticipate what will come in their future or if they need to step back

How to teach mentees to be successful in industry

- Provide a network of contacts
- Soft skills
    - Time management
    - Project management
    - Focus on deliverables
    - Group meetings - talking with new people the mentee hasn't met
    - Have the students consider non-academic careers
    - Don't have to always train the skills - just point out that they have those skills and show them how they can advertise the skills they have/ examples of the soft skills they have gained during research and how to sell it in a CV etc. Things you have done which are not just papers
- It is our job to openly speak with mentees about what might be best for them, be clear and honest with people who are not 'made' for academia - openly discuss the issues students have with academia and whether those problems are going to be a reason to look for an industry career
- How do you make yourself open enough that students approach you about wanting to leave academia?
    - Be open and welcoming
    - There is a perceived fear that the supervisor does not want to work with someone who will leave academia soon
    - Difficult for us as academic mentors to show what it is like to work in industry
    - Organize trips to companies to see how it works/looks
    - Count hours of work in industry toward research credits for Master's students who want to go into industry. Incentivizes them to look elsewhere & makes it clear that industry is an acceptable option.

Careers beyond tenure-track academia

- Share survey info: most students end up outside of academia, make it clear that this is not a problem
- Hold postdoc/graduate student seminars to share options; Emphasis on respecting individual priorities & talents
    - Teaching
    - Undergraduate full time teaching staff
    - Teaching as research
    - Teaching tenure tracks
    - Teaching postdocs (75% teaching, 25% lab work)
    - Science communication
    - industry

Benefits mentors do/might/should receive in the relationship

- More conscious of what I say
- More careful about how I address students
- Think about how to formulate responses
- Listen!
- Gain skills about how to be a good mentor
- Courses/training should be provided
- Getting connections with peers is important
- Bring people at similar career stage together
- Reminds you of problems you overcome

Are mentors your therapist? Do they solve your problems?

- No, but you can give contact details to mental health professionals. Mentors Need to know who to inform or contact, and encourage mentees to seek help elsewhere
- Coaching: Guide conversations - coaching them to the point organically without telling blankly a blunt point. Do not try to solve problems for others - give them the tools to solve problems themselves

6. Acting as an Ally

Madelaine Bartlett, Facilitator

Definitions

From the Oxford English Dictionary:

- ally, a person or organization that supports the rights of a marginalized group (typically a racial, ethnic, or gender minority) without being a member of it.
- advocate, a person who pleads for or speaks on behalf of another; a person who supports, recommends, or speaks favorably of another.
- accomplice, A person who helps another commit a crime; a partner in wrongdoing

Moore & Cox, 2021: Allies, Advocates, and Accomplices
Accomplices Not Allies: Abolishing the Ally Industrial Complex – Indigenous Action Media
'Allies, advocates and accomplices enter into power systems and dialogue in ways that increase their own risk and vulnerability; allies have little vulnerability and risk where accomplices become vulnerable with their multiply marginalized accomplice. One problem that emerges from the ally industrial complex is that allies have much to gain from their allyship, but they have very little at stake.'
Table from Moore & Cox, 2021, above.

	Power Relationship	Central Dialogue	When a Black Woman gets cut...
Ally	Ally maintains power over and doesn't engage the power structure meaningfully.	Ally is in dialogue with others in power.	An ally cries.
Advocate	Advocate maintains power over but engages the power structure meaningfully.	Advocate has two separate dialogues: one with those in power and one with those who are oppressed.	An advocate calls 911.
Accomplice	Accomplice shares power and works with the oppressed to engage the power structure meaningfully.	Accomplice listens to and with those who are oppressed and both takes risks in moving dialogue outside of the accomplice relationship.	An accomplice bleeds.

<u>What does acting as an ally, advocate, or accomplice mean, for a conference?</u>

- Being an ally is making sure there's equitable representation of genders races etc presenting
- Being an advocate is pushing people to go to their talks;
- Being an accomplice is turning down talks when invited and suggests someone else

<u>What skills are needed to act as an advocate or accomplice?</u>

- Knowing your power - we all have more power than we think we do, and can find avenues to act as an allyship, advocate, or accomplice in most settings
- Building community with people from marginalized identities - having conversations so you learn to recognize situations where people from minoritized demographics are being undermined, and have heard about how to act (and how not to act). Importantly, these conversations cannot happen on-demand. It is not appropriate to ask folks from minoritized demographics to educate you. Instead, conversations about these issues are likely to happen between friends and colleagues with established relationships.

- Knowing when to act - both personal and professional safety. Whether others want you to say something or not, the person involved may not want you to say something.
- How to act - what to say and how to say it - practicing stock phrases that slow the conversation down, and reflecting on your own experiences and that of others
- Getting educated - following a diverse group of scientists. Twitter is a great avenue for this.
- Being aware of unconscious and conscious bias
- Managing to integrate it into every day and across demographics - this is something to consider everyday, in almost every situation/interaction.

<u>In context of meetings: what are the first steps to engage colleagues to act as allies, advocates, or accomplices?</u>

- Education - it's not 'woke stuff' - understanding that scientists are part of and influenced by culture, not outside of it. We have our own traditions, rituals, and norms. Perhaps partnership with social scientists/ethnographers to help us see our own cultures and practices could be helpful.
- Normalize talking about our own efforts to work as allies/advocates/accomplices in our science talks.
- Avoid having the discussion in concurrent sessions, anyone with power (we all have some) needs to get engaged and if this is in concurrent sessions, many will choose to remain disengaged.
- Listen to what marginalized folks think and provide the right forums for discussion of issues (without asking for extra uncompensated labor), to bring to the rest of the community

<u>What practices do you/your lab/your institution follow to create a just and inclusive environment (i.e. to minimize the need for allies, advocates, and accomplices)?</u>

- Integrate discussion of DEIJ (Diversity, Equity, Inclusion, Justice) issues into all our work - to signal that they're not separate to the science, but integral to it. For example, we've found that periodic lab meetings focused on DEIJ issues can be helpful.
- Holistic grad student admissions practices
- Visible diversity - for example discussed in our classes, posters in our hallways, but avoiding tokenism
- DEIJ pages on websites that include position statements and resources. When not forced on people, these can signal that you're working towards becoming an effective advocate and accomplice

7. More Inclusive Conferences

Joanna Friesner, Facilitator

Challenges

- Adding hybrid to in-person meetings
    - How to cover these additional costs- new pot of resources needed, if virtual registration fee doesn't cover the actual costs to provide the inclusion
    - And still make it worthwhile to attendees
    - Volunteers organize many of these conferences (those that aren't for-profit); adding a second meeting format via hybrid is a multiplier of complexity and resources needed.
    - Poster sessions online have not been very successful to date.
    - Difficult to effectively integrate the online participants meaningfully & successfully
- Access at the meetings
    - People with varying abilities- ASL interpretation, subtitles
    - People with caregiving needs, lactation rooms, onsite care or stipends to help with children
    - Travel document/ visa issues
    - Gender-neutral restroom access
    - Physical access- mobility issues
- Access to participate at the meeting: economic equity
    - Participation costs to attend in-person present barriers to many, particularly those early in their career, or from particular geographic regions, or from typically under-resourced institutions.

Actions

- Establish an "Equity Fund" that can be used to promote inclusion & accessibility. Participants could apply to the fund to, e.g., waive registration fees, defray some lodging costs or travel, or support childcare or mobility access.
- Facilitate inclusion in your community via affinity groups- self-identified in advance, facilitated by organizers
- Be transparent with your budget- engage with your community on the priorities that exist, the costs to meet them, and what can be addressed via fees, and/or external fundraising, or other approaches.
- Tiered fees to accommodate early career participants, and from less-resourced regions or institutions.

(Virtual) IN PLANTA--Outreach/Working with diverse insitutions

Collective wisdom from our community

JENNIFER NEMHAUSER JUN 19, 2022 07:22PM

NAASC as a connector!

NAASC could serve as a connector

Too many programs are one-time thing

Need time to become trusted, well-established

-where are the funds supposed to come from for self-sustaninability???

Assessment is important & expensive

--need a shift in how we assess, inc. $ and also non-racist performance metrics

Evaluations: how the assessment is done is very important as there could be unintended consequences.

Actions & Activities: hiring Ukrainian scientists during the ongoing conflict

Sustainability is a good point- once you create how do you keep it going?

Working internationally

Would be helpful to think globally; partner and listen to others from all over the world

Doing the assignment as given

Make sure to be asking how we can serve the underresourced/marginalized community members

-Deep, real collaboration with power given to those who are meant to be served

Important to engage early on

Packaging courses and demo materials and sharing them with other educators across the globe

Case story: contacted 50 faculty at HBCU initially, received responses and worked with 3 to take on a new project. Challenge: Connecting.

Do not judge ability of a research scholar on the basis of publications! Instead, connect and analyse the capabilities via different talents.

Challenges

-identify and connect with faculty at HBCUs (contacted 50 faculty as potential partners, worked with 3 in the end--great start but challenge of overwork)
-How to compensate/incentivize

--trust needs to be developed

Teacher training workshops to reach out to kids through their science teachers

Hosting high school students with disabilities in our research labs for short (or long) internships

International collaborations to promote research in underdeveloped countries!

Need to listen

Need to tailor things to specific community/institutions you want to work with

Challenges: knowing what different institutions are and what they need/want

HHMI seminar series- specific action to help community climate and culture

Educational Youtube videos

Museum demos at a local (free-to-the-public) science museum

engagement with diverse academic institutions outside of ' R1' institutions- community colleges, tribal colleges, MSIs, HBCUs etc

How to Recruit from diverse institutions

Example actions & activities: Preschool outreach activities with local schools to increase plant awareness among young learners

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(Virtual) IN PLANTA--Mentorship

Collective wisdom from our community

JENNIFER NEMHAUSER JUN 19, 2022 07:32PM

A NAASC mentoring network??

really need to help people have more mentoring experiences--to help dilute the bad moments

Include mentorship training in REU programs

For some of us , learning to be better allys so we are not putting all of the (largely unpaid) labor on minoritized populations

connections with MESA and TRIO programs- scaffolding programs across different academic levels

NSF TIP Directorate worth thinking about

Postbac programs are limited but extremely valuable

NSF's REPS program (funding postbacs in labs that had NSF funding) was HUGELY successful as defined by lots of applicants and lots of applicants with diverse identities

retention is so important

there are some great programs out there--
like at Stanford (how to survive a PhD)

*side note: wouldn't it be amazing if we didn't need to help people "survive"?

Career options after Ph.D. or post-do are really narrow what can be done to tackle this problem

Retention issues -- how do you motivate students and instill a long-term vision (when there are financially more attractive immediate options)?

Berkeley Biology Scholars Program

As an example of a way to bring some interested people into plant sciences

interdisciplinarity may help with some issues

Might be some interesting pubs in Cell Biology Education Journal- at one point Erin Dolan was involved w ASPB

Mentorship statements/philosophies- shown front and center on faculty pages

need more ways to share things that work!

Iowa state program

https://www.sciencebound.iastate.edu/

Science Bound - Science Bound

Science Bound is Iowa State University's premier pre-college program to empower Iowa students of color to pursue degrees and careers in STEM fields.

SCIENCE BOUND

Cultural humility

We need short, mid, long term solutions

training of mentors to be culturally-engaged

make sure harm is not being done during 'mentored' experiences

need mentors that share identities with students

Start early (way before college), e.g. in elementary or middle school. Expose kids to plant science and provide continued guidance and mentorship all the way to college and grad school.

Get rid of GPA requirements

Think about what your metrics are when considering participant pools- maybe thing about different ones

Opportunities after postdoc, non-academic jobs, funding to postdoc.

diverse applicants at later career stages are very limited in number & highly recruited by few institutions--how can we bolster the pipeline?

-Dior shared a program at Iowa State where 8th graders are brought into STEM, connected with faculty, tuition is covered

--Middle school is critical

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