Research leaders have many roles.

Encouraging, supporting, and developing people and relationships
Goals: Healthy environment and team dynamics, collective success
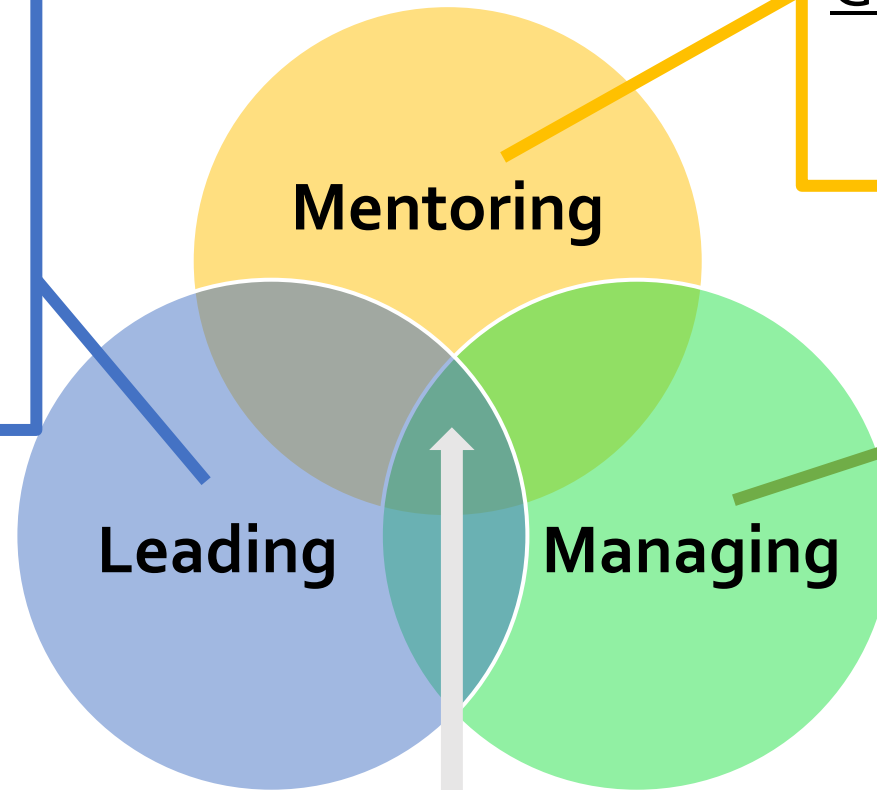
Advising, training, and supervising
Goals: Research competence, independence, career planning

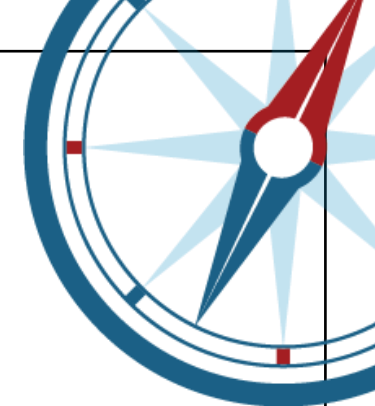**Coordinating people, tasks, and projects**
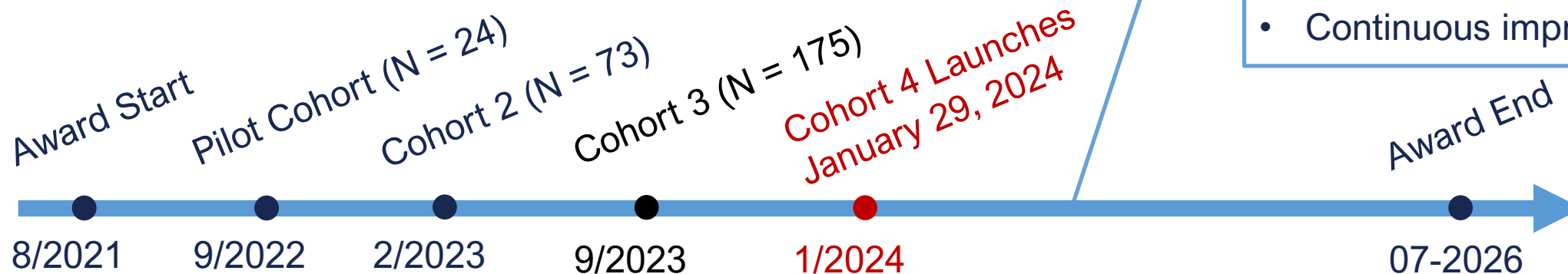Goals: Correct, rigorous, thorough work

Mentoring

Leading

Managing

Communication, feedback, guidance, support, consideration of individual needs

2

Antes & Maggi (2021); McIntosh, Sanders, & Antes (2020)

COMPASS

researchercompass.org

- Evidence-based national program funded by NIH
  (R25GM143346; PI: Alison Antes, PhD)
- For biomedical junior faculty and postdocs
- Remote training and mentoring
- Learn essential practices to lead and manage research

Free!

- More cohorts
- Plan for sustainability
- Continuous improvement

Award Start

Pilot Cohort (N = 24)

Cohort 2 (N = 73)

Cohort 3 (N = 175)

Cohort 4 Launches
January 29, 2024

Award End

8/2021   9/2022   2/2023   9/2023   1/2024   07-2026

Program Evidence Base

- Based on our team's work on responsible conduct of research, root causes of research wrongdoing, exemplary research leadership, and researcher training and development

- In-depth interviews with research exemplars
  - Top theme: building quality relationships matters

- Focus groups with early-career researchers about training needs
  - Top theme: how to effectively lead research teams and create healthy team dynamics

4

Antes, Kuykendall, & DuBois (2019); Antes & DuBois (2018)

Program Evidence Base

- Survey of NIH-funded postdocs about PI behaviors
  - **Fostering relationships**: productivity ($r = .16$), perceptions of lab ethicality, ($r = .53$), job satisfaction ($r = .53$)
  - **Directing research:** perceptions of lab ethicality, ($r = .64$), job satisfaction ($r = .49$)

- In-depth interviews and surveys of institutional officials about root causes of research integrity violations
  - **93%** said inadequate supervision of research is a common cause

5

5 Elements of Scientific Excellence

Discovery and Impact

Rigor, Reproducibility, and Transparency

Responsible Conduct of Research

Diversity, Equity, and Inclusion

Mentoring

3 Domains of Best Practices

LEADING OTHERS
best practices

Cultivate a positive work environment
1. **Convey** your scientific mission and leadership values
2. **Communicate expectations** of a collegial and supportive lab environment
3. **Credit members** for contributing as lab citizens
4. **Communicate and mentor** with transparency and fairness
5. **Respond** to mistakes and problems receptively and calmly

and to research outcomes

Build relationships
1. **Connect** with people as people
2. **Communicate respectfully** and listen actively
3. **Express appreciation** for good work
4. **Offer support** and encouragement
5. **Be approachable** and available

Strive to understand others' perspectives
1. **Remember** that others may not share your views, knowledge, experience, or skills
2. **Be open** and curious about others' experiences
3. **Reflect** on how others might see things and feel
4. **Invite** people to share their point of view

Encourage team engagement
1. **Invite feedback** and ideas about how the lab functions
2. **Encourage** cooperative work in the lab
3. **Celebrate** achievements as a team
4. **Foster opportunities** for members to connect as people and create community
5. **Create** a shared sense of accountability and ownership
6. **Prioritize inclusion** of all lab members

Resolve conflict
1. **Address issues** rather than letting them fester
2. **Have difficult conversations**
3. **Guide members** to address their own conflicts
4. **Reiterate** the expectation of civility

Model the way
1. **Express your values** by explicitly telling others what you care about
2. **Model responsible conduct** of research
3. **Be willing to share** your story and own struggles in research
4. **Help lab members** navigate inevitable failure and setbacks
5. **Be willing to be wrong** and correct course accordingly
6. **Monitor for cues** that life in your lab is what you want it to be

researchercompass.org
© 2022 Compass and Washington University in St. Louis

MANAGING SCIENTIFIC WORK
best practices

Set and align expectations
1. **Orient prospective lab members** to expectations about their scientific work and behavior
2. **Use tools** (e.g., lab manual, individual development plan) to communicate and develop shared expectations, especially when onboarding
3. **Inquire** about lab member's unique goals and motivations
4. **Identify lab member skills** and areas for growth
5. **Re-evaluate and re-align** expectations over time

Establish operational procedures
1. **Articulate expectations** about research rigor, integrity, and compliance in a lab manual
2. **Utilize lab manual** and formally onboard new members about how work gets done in the lab
3. **Establish rigorous research procedures** for conducting studies and record keeping
4. **Utilize written procedures** (e.g., SOPs, protocols, checklists) for science and compliance tasks
5. **Monitor** to ensure members follow lab policies and procedures

Manage the data lifecycle
1. **Establish** written data handling and storage policies
2. **Ensure** appropriate data storage, analysis, version control, and backup
3. **Discuss** data and interpretation of data openly in the lab
4. **Store all original and processed** data in a central location accessible to lab leader
5. **Establish** data plans to foster ease of sharing and transparency outside the lab
6. **Review original data** whenever feasible

Provide formal training
1. **Formalize scientific training** to ensure lab members are proficient before performing tasks
2. **Explicate rationale** for how design and method decisions foster rigor and reproducibility
3. **Explain** to lab members norms and principles for responsible conduct of research
4. **Ensure members** understand the policy and compliance requirements that govern the lab's research

Hold effective meetings
1. **Have regular standing meetings** with both individuals and as a team
2. **Review work** in one-on-one and team meetings
3. **Use written agendas** and document next steps
4. **Coach** lab members about how to prepare for meetings
5. **Coordinate** lab member activities and interdependent tasks

Provide feedback and guidance
1. **Monitor** progress and give routine input
2. **Help** troubleshoot while also encouraging independence
3. **Give direction** when work does not meet expectations
4. **Assess member understanding** of tasks, feedback, or next steps
5. **Adjust** approach to unique skills and traits of individuals

researchercompass.org
© 2022 Compass and Washington University in St. Louis

LEADING SELF
best practices

Use the SMART approach
1. **Seek help** and find resources when unsure
2. **Manage** unconstructive emotional responses
3. **Anticipate** downstream outcomes
4. **Recognize** relevant rules, policies and guidelines
5. **Test** your personal assumptions

Reflect, experiment, and adapt
1. **Understand your strengths** and leverage them
2. **Recognize and accept** your limitations
3. **Regularly reflect** on what is and is not working
4. **Try new approaches**

Cultivate your network
1. **Find multiple mentors**, advocates, and sponsors
2. **Build professional connections** with mutual benefit
3. **Find collaborators** who complement your strengths or offset your weaknesses
4. **Seek guidance** from trusted colleagues

Prioritize your needs
1. **Communicate** your needs
2. **Recognize** when you need to say "no"
3. **Be judicious** about when to say "yes"
4. **Advocate** for yourself
5. **Delegate** work when appropriate

Manage your wellness
1. **Know** your personal definition of success
2. **Act** in alignment with your values and priorities
3. **Adopt** daily stress management techniques
4. **Recognize** what drains and restores your energy
5. **Take time** for non-work activities that are restorative and give you outside perspective

Be strategic and intentional
1. **Strategize** with mentors who know the unwritten rules of academia
2. **Set aside regular focused time** to strategize about your research program, funding, and career plan
3. **Use your time** in alignment with your career priorities
4. **Know and utilize** the resources around you

researchercompass.org
© 2022 Compass and Washington University in St. Louis

Leading Others

1. Cultivate a positive work environment

2. Build relationships

3. Strive to understand others' perspectives

4. Encourage team engagement

5. Resolve conflict

6. Model the way

Managing Scientific Work

1. Set and align expectations

2. Establish operational procedures

3. Manage the data lifecycle

4. Provide formal training

5. Hold effective meetings

6. Provide feedback and guidance

Leading Self

1. Use professional decision-making strategies

2. Reflect, experiment, and adapt

3. Cultivate your network

4. Prioritize your needs

5. Manage your wellbeing

6. Be strategic and intentional

Concluding Thoughts

- Interpersonal dynamics affect how the work gets done

- Having to learn these skills through trial and error is a disservice to science

- Researchers need to be taught leadership and management skills to support career success and scientific excellence

THANK YOU!

Questions?

✉ t.mcintosh@wustl.edu

🐦 @TheEthicsDoc

researchercompass.org

References & Further Reading

1. McIntosh T, Antes AL, Schenk E, Rolf L, DuBois JM. Addressing serious and continuing research noncompliance and integrity violations through action plans: Interviews with institutional officials. Accountability in Research. 2023 Mar 13:1-33.

2. Antes AL, Maggi Jr LB. How to Navigate Trainee-Mentor Relationships and Interpersonal Dynamics in the Lab. Current Protocols. 2021 Mar;1(3);e86. https://doi.org/10.1002/cpz1.86

3. McIntosh T, Sanders C, Antes AL. Leading the people and leading the work: Practical considerations for ethical research. Translational issues in psychological science. 2020 Sep;6(3):257.

4. Antes AL, Kuykendall A, DuBois JM. The lab management practices of "research exemplars" that foster research rigor and regulatory compliance: A qualitative study of successful principal investigators. *PLOS One.* 2019;14(4):e0214595.

5. Maestre FT. Ten simple rules towards healthier research labs. *PLOS Computational Biology.* 2019: e1006914.

6. Antes AL, DuBois JM. Cultivating the human dimension in research. *Mol Cell.* 2018;72(2):207-210.