



Responsible Conduct of Research: Advising and Mentoring





Dealing with conflicting views...



How has your opinion on authorship criteria been shaped and influenced?

- How many believe that an undergraduate should be included as a co-author as long as s/he has done one experiment that produced data that actually appeared in a paper?
- How many believe that a distinguished scientist from another university who made some helpful suggestions about your research should be included as a co-author?
- How and when you learned, or came up with, your opinion about contributions needed for authorship? – 3 minutes each



How has your opinion on authorship criteria been shaped and influenced?

- How many of you would say a mentor has been THE most important influence on your ideas of what it takes to be included as an author?
- If not, who/what has been?
- How many of you have had more than one mentor who had different ideas about who should be included as an author and/or how order of authorship should be determined?
- For those of you who got different information, how have you decided which one to follow?



For group discuss

- So where does this leave you in terms of how you see....
 - Mentoring in the lives of scientists
 - What it means to you as a future mentor
 - The roles of mentors in RCR



Let's look at mentoring in general...as a system or a process

- Research training is very different from professions like medicine – mastery of a well-defined body of knowledge, skills, practices
- In the past, most scientists had 2-3 primary research mentors before a real job/career – apprenticeship model
- Now, training is extended but still a sequence of mentors
- Also collaborations often needed for big/important projects but how can everyone get credit and learn from mentors?



Strengths of mentor-based training

- High ability to match interests and styles of mentors and trainees
- Great flexibility in adapting to different starting points and evolution rates of trainees
- Ability to evolve over time – from dependent to independent to colleague relationships
- Maximizes variety of outcomes – no two will be alike – *not unlike natural selection*
- Mentors usually can balance time required with other responsibilities – or can they?



Strengths of mentor-based training

- Done right, both parties benefit
- Provides infusion of new, unbiased ideas to research teams
- Potentially, a great deal of personal as well as professional sharing
- Others?



Limitations of mentor-based training

- Unspecified details of what is to be achieved and transmitted from mentor to trainee
- Requires a lot of communication that may or may not happen easily
- Not easy to ensure everyone is on the same page
- Labor-intensive and repetitive one to one elements
- Mentors may have 'grown up' in very different era
- Hard to mentor someone toward a career you have not done before – big impact recently



Limitations of mentor-based training

- Goals and priorities of mentor and trainees may differ dramatically
- Mentor time demands and life realities may not mesh with trainee needs
- Mentors play dual training/support and evaluative roles
- As professional difference decreases the benefit to the mentor can decrease – e.g. senior faculty mentoring junior faculty
- Little direct reward for time and expertise of mentors in academia outside of research productivity



Competing/conflicting interests inherent in mentoring....

- “For graduate students, I expend all of my energy teaching them and just as they get good they leave – I can get a bigger Return On Investment by keeping them longer!”
- “If I give her latitude to come up with her own ideas and directions, it can easily pull resources away from getting the results I need for my grant renewal. She might hit a new idea or jumping off point, but can I take the risk?”



More Competing/conflicting interests....

- “My postdoc needs to get a grant to be most competitive for an academic position but the time it will take for him to do that is a huge loss of productivity on what I am paying him for. And I can’t afford to let him take work that we plan to pursue.”



More Competing/conflicting interests....

- “I would like to be able to mentor the lecturer in my department but what’s in it for me? There isn’t any collaboration or contribution toward my own advancement, only time away from my own research and mentoring my students and lecturers. I have publications to write and two grants due within the next year and the current success rate for funding is low!



What if your mentor said to you...

- “Tomorrow I want to dedicate an hour to just talking about things you are unsure about, hear conflicting opinions on, or concerns you about how science is conducted. Think about what you would like to talk about.”
 - What would be your initial reaction?
 - 3 minutes and jot down what you would bring up
 - 3 minutes to discuss with those around you
 - 2 minutes to discuss in your local group
 - What topics came up? Collect them!!!
 - How would it be different one on one with your mentor vs. in a lab meeting? Which would you prefer? Why?



Let's look at RCR through the eyes of mentors – all of you are or soon will be mentors!

- For now, everyone take on the role of MENTOR. How will you go about teaching and assuring that those who are learning research from you acquire the expected behaviors?
 - Do you expect they will learn it by simply being around you and seeing how you do things?
 - Would you rely on formal training like this?
 - Would you build it explicitly into lab meetings or other group activities?
 - Would you consciously spend time talking one-to-one with everyone? How much and when?
 - Would you create a detailed lab behavior manual?
 - What topics will you cover and how?
 - *Think about this throughout the course....*



Just what are the responsibilities of mentors to prepare students for the future?

- This actually is a very tough question – seldom discussed openly, defaults to the beliefs and past experiences of each mentor
- Even less often defined with respect to RCR
- Wide variations in beliefs
 - One extreme – hands off – provide an environment for each person to use as they wish
 - Other extreme – very carefully constructed developmental sequence with high level of dialogue to ensure benefit of trainee
 - Probably more monographs, books, papers, opinion pieces on mentoring than any other topic in science!



Where is current thinking on mentoring in research training headed?

- Moving away from just leaving decisions of how to guide students and postdocs up to mentors
- At the postdoc level, moving to more explicit conversations between postdocs and mentors
- Individual Development Plans becoming common, sometimes required
 - Not a contract but structured tool to help trainees to consciously think about career goals, current strengths, current weaknesses
 - Emphasis on primary responsibility of postdocs for their own futures
 - Document becomes focus of conversations, living document, revised/reviewed at least annually – gets everyone on the same page
- Seed awards in clinical setting require formal mentoring team!



I would argue it can't be left so much to chance when it comes to RCR...

- Proposal – anyone who accepts the role of primary research mentor for a student or lecturer must acknowledge and accept responsibility for mentoring in all of the realms of RCR currently recommended for courses like this
 - They would be required to indicate in writing how they will assure this
- Debate the pros and cons of this proposal in your local groups...
- What key ideas emerged?
 - Good vs. bad idea
 - Feasible vs. not feasible



Given all of this, what are the best ways for mentors and lecturers/students to work together?

- Open communication and dialogue
 - If there was a rulebook or set of laws we could pass them out, but there isn't
 - Much is not agreed upon or vague – those who are learning need to feel comfortable asking for clarification
 - Recognize that everyone is 'learning' from many different inputs
 - mentors, other faculty, observation
- Be very careful to keep the high ground, guard against falling back on "everyone does it" as a justification for practices that are questionable or wrong
- Talk about things before they happen whenever possible
 - Talk about authorship early and openly



More 'best' practices...Mentors...

- Reflect on your practices, how they match the scientific community
 - Would you be comfortable with a story about your actions on the front page of The Guardian?
 - Never forget that others are learning from YOU!
- If a student or lecturer raises questions or compares your way of doing things to others, be open to discussion and different ways of doing things
- Develop a clear plan to make sure everything is covered and clear, not just wait and see if things come up
 - You don't need to have a 'class' for everyone, but think through and plan how you will convey your beliefs and practices clearly and consistently
 - Plan to bring up key issues to discuss with your group



More 'best' practices...Students...

- Don't hesitate to ask for clarification and explanation
- You don't have to adopt the practices of your mentors if they are questionable – you are responsible for your actions – set a high bar
- When you move from one lab or group to another lab or group, be aware that practices may be different so find out
- Remember – others are learning from you too – peers and others with less experience



Questions & Discussion

