Panel Discussion: Mentoring and Mentee Roles

Mentoring in Research: Finding the balance between achieving productivity and spurring creativity

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I’ve been lucky to have a lab and run a large research program for 20 years
Any success that we have had is due to the hard work of the students who I have had the honor to mentor over the years.
First things first: 
Educational objectives and (my) philosophy

My job is to make you famous

My other job is to prevent you from becoming infamous

I do consider my job as an academic mentor to be to promote the education and ultimately the career of my protégé’s - I want them to rise to “the top”, however they define that.
First things first: determining goals and future directions

Where to you want to be in 10 years?
Is your focus:

7  industry
3  clinical medical physics
4  academic research
1  government
   administrative

Once you have accepted a student into your “lab”, you need to determine what the career goals are for the incoming student – as listed in this slide, the options are many and the training methods are different depending on the final goal – realizing that sometimes students change their career goals mid-stream.
First things first: Educational objectives and (my) philosophy

Outside of classwork, a research-oriented Ph.D. or M.S. is really defined by a collection of different SKILL SETS. Different students will have aptitude for different skills, and this should be nurtured but also directed toward the goal of the project. Some duties of a student involve scut-work, and since I do plenty of that, I expect my students to, also.

Graduate School is about building skill sets

- Industry
- Clinical medical physics
- Academic research
- Government
- Administrative
- Dissertation
- Lab necessities
Just because this is the default of EXCEL and MATLAB, using different significant figures on the axis of a plot IS JUST WRONG.
Over time:
Pet peeves and guiding principles

- All work should be the best it can be
- Your publications ARE your reputation in academia
- Scientific writing is key to all career paths
- I will always take the effort to understand you
  - ... and you need to take the same effort to understand me
- We follow all the rules, and we always tell the truth
- You can always call me, day or night

This slide speaks for itself. Strive for excellence - always, and despite the straight jacket that researchers are expected to wear, we need to follow the University rules.
Over time:

Finding the balance between achieving productivity and spurring creativity

- Lead by example
- Point them in a scientific direction (*funding dependent)
- Give them the tools, and get out of the way
  - But always be available for questions and discussion
- Let them turn over the rocks on their journey
- Expose them to other scientists

Productivity is important, but a student will not learn how to think independently unless you give them the opportunity to do so. That means not micro-managing projects, and letting each student follow their own curiosity as they mature as young scientists. Let them do science that you don't necessarily understand - or your students will only push the limits of your knowledge - not theirs.
Experienced Grad Student (4 & 5 years)
Publication management and developing their next job

- Managing student publications
  - The red pen
  - Responding to manuscript reviews
  - Submitting rough drafts to journals
- Involvement in AAPM (& others)
- Post-Doc in my lab?
- Calls from friends in industry & elsewhere

All academic advisors need to teach their students how to write scientifically. E.G., “Nowadays” has no place in a Medical Physics article. I red-pen a lot instead of “track changes”, because the student has to actually read the corrections and learn – not just hit “accept all”. Get your students involved in AAPM activities - it’s a kick down their career path.
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Most of these slides have had that icon of a student in them. That’s because mentoring is, in fact, all about the student. If you put your own goals above your students, then you should not be an academic advisor. The dirty little secret is, that nurturing your students is the best way to promote yourself academically, anyway.
Graduation ceremonies can go long – six hours at UC Davis for Graduate Degrees. But you have to do it if your student wants to – take an afternoon out of your busy life and celebrate their huge achievement. Smile, pose for photos, and demonstrate to your student’s family that you respect their loved one. Embrace the joy of fostering the next generation of scientists.
After Graduation

- Your student will always be your student
  - Letters of recommendation
  - Continuing collaboration
  - Providing opportunities to promote their career

It doesn’t end at graduation.
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Thank you for attending this session, and if you have any questions about my presentation – or about anything – please feel free to Email me at: jmboone@ucdavis.edu

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