Surviving Graduate School

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Major Benchmarks in the Life Sciences: Three Stages

1. Technically proficient worker (1-3 years)
2. Good scientific communicator (by 4-5 year)
3. Creative independent researcher (5th year = graduate!)

Major Benchmarks in the Life Sciences: Three Stages

1. Technically proficient worker
2. Good scientific communicator
3. Creative independent researcher = graduate!
Major Benchmarks in the Life Sciences: Three Stages

1. Technically proficient worker
   – Use proper research practices
   – Develop good time management skills
   – Become an efficient researcher

2. Good scientific communicator

3. Creative independent researcher = graduate!

Enhancing Knowledge, Independence and Critical Thinking

Start this year by...

- Reading papers in your field (on your own)
- Discuss the papers with your mentor as needed
- Begin reading papers close to, but outside of, your field (broaden your knowledge) over time
Communication with your Mentor

*This is not scary, this is not you wasting his/her time, this is essential!!!*

Use An Individual Development Plan (IDP)

- Structured, step-by-step list to help articulate progress and future goals

- Sections include:
  - Introduction to the process and procedure
  - Signature page for participating parties
  - Annual progress report
  - Plans for upcoming year
  - Annual review (to be completed by mentor)

Does this describe your relationship with your advisor?

![Comic strip showing communication issues](image)

Take Charge of Your Education and Training

- Be responsible for your own goals and deadlines

- Read papers ON YOUR OWN and then share them with your mentor. (Don’t depend on him/her to tell you what to read.)

- Come up with your own ideas and discuss them with your mentor and peers
Skills to Complete the PhD

What is the most important thing you need to do to graduate?

Getting your Research Published

1. Think in terms of a paper
   - Outline what you think will be the figures
   - Go over this in depth with your mentor
   - Draw the figures with the controls
   - Keep this at your desk in a visible place

2. Assess progress towards paper at end of the week
   - Did you complete a figure? YES/NO
   - What experiments do you need to do to complete the figure or start next figure?
   - Do you need to readjust your paper title/ideas/future figures?

Getting your Research Published

3. Write the paper
   - Give the paper a title FIRST (focuses your work)
   - Start with figures and figure legends
   - Use figures and figure legends to write results
   - Write intro and discussion last
Manage Your Time Wisely!

Day-to-Day Skills for Success

- Make daily lists with goals
- Be reasonable about what you can do
- Mark off things as they are completed
- Make a new list at the end of the day

Major Benchmarks in the Life Sciences: Three Stages

1. Technically proficient worker
2. Good scientific communicator
   - Give good presentations
   - Write papers and reviews
   - Teach guest lectures or courses
   - Ask questions at conferences
3. Creative independent researcher = graduate!
Communication in Graduate School involves:

- **Presenting:** Lab meetings, departmental seminars, international conferences
- **Writing:** Manuscripts, funding proposals, meeting abstracts, etc.
- **Teaching:** Mentoring an undergrad, TA-ing a large course, giving guest lectures
- **Asking questions:** in meetings, in seminars, at conferences

Written and Oral Communication Skills

Effective communication helps you re-evaluate your own understanding and your goals.

Tangible outcomes:
- If you don’t publish it, you didn’t do it!
- If you don’t talk about it, no one knows you did it!

Teaching is Synergistic with Research

- Learning something in depth enough to teach it reinforces concepts
- Speaking your ideas/concepts out loud lets you re-evaluate your own thoughts
- Addressing questions from others give you another viewpoint and may pinpoint gaps

How do you teach in graduate school?

- **Formal Teaching**
  - Teaching assistantships (formal teaching)
  - Guest lectures
- **Informal Teaching**
  - Mentoring of other students/staff
  - Giving research presentations (posters and talks)
  - *Explaining your research to someone else (even over coffee or lunch!)*
Ask Questions!!!

- Research is about asking questions
  
  *How can you ask your own research questions if you can’t ask questions of others?*

- Start by asking questions in classes and seminars

- By probability, you WILL eventually ask a stupid question. (It’s NOT a big deal.)

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How does one develop his/her personality....

People develop personalities, sense of humor, wit, by *interacting* with others.

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Growth as a scientist is the *SAME* thing!

Scientists find out if their experiment/goals/models/ideas are good by asking others and seeing how they react.

*What are your examples?*
Major Benchmarks in the Life Sciences: Three Stages

1. Technically proficient worker
   - Test scientific question.
2. Good scientific communicator
   - Explain scientific question.
3. Creative independent researcher = graduate!
   - Ask your OWN scientific question.

You are an independent scientist!

I have a PhD!!!!

Now What??
What is your future?

- Grad school is not a job!
- What are you going to do in the future?
- How do you pick a career?

Use Resources to Map Out your Goals

- Progress evaluations within your department/laboratory
- Individual development plans (IDPs) on the web
- MyIDP at sciencecareers.org

So, to be successful in grad school...

You must:
1. Work effectively at the bench
2. Write papers
3. Give presentations
4. Teach
5. Measure your progress
6. Plan your career

...... a whole lot of work!!!!

*The problem: Your life is NOT 100% research!!!!*
Maintaining A Work-Life Balance

- Keeping yourself healthy
- Being an equal marriage partner
- Caring for children/parents
- Building a supportive network

Stay Healthy!!!

Balance Caregiving with Research

- Become VERY organized and efficient
- Remember, quality counts more than quantity
- Learn what must be done versus what you would like to do. (You will miss some things.)

*Family comes first.*
*There’s ALWAYS another experiment.*
Build a Strong Supportive Network

- Join scientific groups, community groups (like Graduate Women in Science)
- Attend social functions with other graduate students and postdocs
- Get active within the broader scientific community (local, national or international societies)

Surviving Graduate School

You're not alone.

Team Sisyphus
Resources

• Sciencecareers.org (Science Magazine)

• Chronicle.com (Chronicles of Higher Education)

• FASEB IDP:

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