
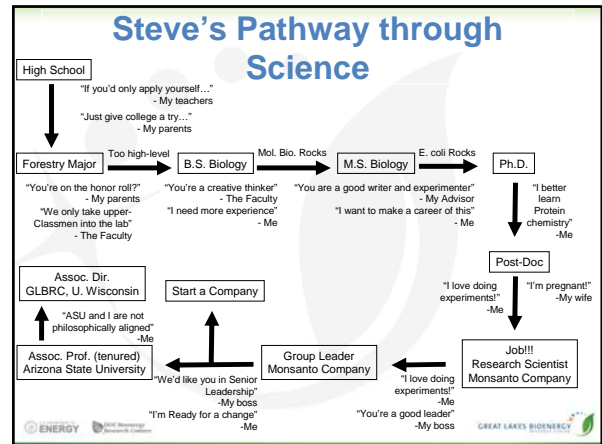



Navigating between Industry and Academia

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(Some) Necessities for Success in Industry

- ✗ Excellent and broad technical skills
- ✗ Excellent Communications skills
- ✗ Collaborative attitude and willingness to learn
- ✗ Creativity; new products come from new ideas
- ✗ Flexibility in the type of work that you do
- ✗ Ability to align with the mission of the company
- ✗ An understanding that your work must lead to a productive outcome. You can't follow all the interesting leads




Industry vs. Academia Different Kinds of Rewards

- ✗ **Industry**
 - Pay is usually better. May include stock options (which may or may not be valuable)
 - Generally work in a diverse team. Must be able to achieve personal satisfaction from team-based projects.
 - Main output is applied knowledge and products. It can be very satisfying to bring a product to market.
- ✗ **Academia**
 - Your work is often driven from your own ideas (but see below)
 - You determine the pace and atmosphere of your lab
 - You have the opportunity to constantly interact with students
 - May be easier to build an individual reputation for yourself




Industry vs. Academia Different Kinds of Pressure

- ✗ **Industry**
 - Focused projects with short timelines
 - Milestone-driven decision making
 - Business decisions generally chart course of work
 - In small companies, funding often in question
- ✗ **Academia**
 - Must have your own creative ideas
 - Must generate your own funding – times are tough!
 - Teaching takes large amounts of time
 - Not always easy to find good students



Things You'll Learn in Industry that you Won't (Necessarily) Learn in Academia

- ✗ **Organizational dynamics & Management**
 - How do people behave in an organization?
 - How can you help them to be successful?
 - How can project management drive success? (milestones, stage-gated development, Quality Management, etc.)
 - Safety, Safety, Safety....
- ✗ **How patent law works**
 - How to work in patent attorney to generate IP
 - How to construct your experiments to provide the fastest path to IP
 - How to avoid losing IP by disclosing your ideas prematurely



Things You'll Learn in Industry that you Won't (Necessarily) Learn in Academia

- ✗ How businesses work
 - In small companies; how do angel investment, Venture Capital, IPO's work
 - In large companies; how does the company manage markets, debt, marketing, etc.
 - In all types of companies; how to balance R&D investment vs. profits, stakeholder interests,
 - How the competition can help and hurt your company's ability to survive
 - Companies (especially large ones) generally do a very good job of training their people in multiple areas that affect the company

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Most Large Companies Have Two Science Tracks

- ✗ Technical Track – Allows scientists to stay at the bench.
- ✗ Management Track – Allows scientists to move into various management positions. Some are more science-related. Some are more business-related.
- ✗ May also have a legal track

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Moving from Industry to Academia

- ✗ If you think you'll want to do this at some point:
 - Publish your work
 - Speak at conferences
 - If possible, help to write grants for your company (e.g. SBIR) or look for chances to collaborate with university labs. Become a PI or co-PI, if possible
 - Learn as much as you can about the business and how to lead people
 - Build a network in industry and academia!!
- ✗ As you prepare to move:
 - Decide what type of school you want to join (R1, LAI)
 - Propose a research program that builds on the strengths of your industrial work
 - Communicate your teaching skills.
 - Use your broad industrial experience as a selling point for a faculty position.

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Know what you are getting into

- ✗ Make sure that you have an understanding with your company, boss and coworkers regarding publication.
 - The culture around publication varies at different companies. If possible, join one that is supportive.
 - Always remember that your primary job is to get the applied work done. Consider publications to be an important, but auxiliary, output of your job.
 - You'll often need to write your publications on your own time.

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The Keys to Publishing While Working in Industry

- ✗ Plan your experiments very carefully.
 - Think about what you need for your company's research project.
 - Think about the figures that you want in the paper.
 - Figure out every datum that you need, plus every datum that you want.
- ✗ Perform your experiments very carefully.
 - Industry research moves quickly. Once you have a result, you move to the next step.
 - You won't have time to repeat more than once. If you screw up, you won't have a chance to go back and do the perfect experiment.
- ✗ Write your paper while you are writing your internal reports.
 - You will need to document your work internally. Write in a manner that is publishable.
 - When you are in the writing mode, fill in the details you'll need for a paper (Materials and Methods, References Cited, etc.)

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Look for opportunities to educate the larger public, particularly when you think you can explain complex issues to a wider audience.



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Scientific American, August, 2000 GREAT LAKES BIOENERGY

Patents vs. Publications

- ✗ Writing a patent should never slow down a publication.
 - The burden-of-proof is lower for a patent than it is for a publication. The arguments are simpler, the evidence needed is less, and you'll have someone helping you to write it.
- ✗ Use the patent writing as a path to your publication.

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Moving from Academia to Industry

- ✗ Easiest at early- or late-career
 - Early: young talent with energy and knowledge
 - Late: experience with a reputation and knowledge
- ✗ As always, you need to meet a very specific need for the company
- ✗ Your technical accomplishments and reputation will get you the interview
- ✗ Your social and communications skills will get you the job.

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Start Your Own Company!

- ✗ A company is very easy to start (less easy to keep alive)
- ✗ Just need one good, potentially applicable, idea
- ✗ Funding can come initially from SBIR or STTR grants
- ✗ Additional funding can come from contract work (Networking is important!!!)
- ✗ Be prepared to change your research area as new opportunities arrive

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Communication Skills: Written and Oral.



- ✗ The ability to communicate is absolutely essential to success. Communication means;
 - You can convince others of the validity of your ideas.
 - You can obtain ideas from others and work collaboratively.
 - You can present yourself professionally in any situation.

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Knowledge of Complementary and Overlapping Fields

Breakthroughs occur where fields overlap and complement each other.

Having a general knowledge of other fields will permit you to find the help you need for particular projects.

It will also give you the confidence to take on projects in new areas.

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Balance Between Work and the Rest of Your Life

Work is an important part of your life, but not the only part.

Cultivate outside interests, preferably at least a few things that aren't directly related to your work.

Force yourself to make time for them.

Thank You!

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