Overview of Career Opportunities in the Life Sciences Sector

MGH Graduate Student Division
October 22, 2015

Lauren Celano
CEO, Propel Careers
Lauren@propelcareers.com
Outline

- Careers Paths
- Career Options
- How to highlight and build relevant transferable skills
- How to identify roles and titles
Skills for Academic Success can also apply to Industry

- Publications and Presentations
- Thought Leadership (e.g.)
  - Peer Reviewing
  - Chairing conferences
  - Advisory Roles
- Grants Navigation / external funding
- Involvement in the University
  - IRB, IACUC, etc
  - Admissions committees
  - Departmental initiatives
- Collaborations
- Teaching
- Mentoring
A Few Industry Career Paths

1. Bench Research → Lab Head → VP / CSO
2. Bench Research → Project Manager → Commercial Development
3. Bench Research → Clinical / Medical Affairs → Clinical Development
4. Consulting → Business Development → CEO
5. Bench Research → Business Development → CEO
Many organizations have different career tracks:

- Management track
  - Do research in an org → 3-5 years later Manage people, projects, teams, etc

- Research track
  - Strong bench researchers are invaluable. If you like research, you can have a fulfilling career at the bench
Variety of Career Paths - Postdocs

Academic
- Research fellowship
  - Medical Institution
  - Research Institution
  - Non-profit
  - NIH
- Policy Fellowship
  - i.e. AAAS
- Mass Media Fellowships
  - i.e. AAAS

Industry
- Research Postdoctoral fellowships
- Non Research Postdoctoral Fellowships
  - Regulatory
  - Medical affairs
  - Quality
Choosing an Academic Track Post-Doc

- Choose a post-doc at:
  - a highly respected Institution
  - a highly respected lab, “pedigree” will get you interviews!

- Change your research focus (i.e. Ph.D. in *Drosophila* genetics sleep research), Post-doc:
  - Same behavior, new organism (*human* sleep research)
  - Same organism, new behavior (ie. *Drosophila* memory)
  - Same organism/behavior, new approach (*Drosophila* sleep *electrophysiology*)

- To move to industry, choose a post-doc lab that will:
  - Expose you to a disease-relevant field
  - Train you in industry-relevant techniques
  - Allow you to initiate collaborations with industry partners
Choosing a Post-Doc Within Industry

- Find a company that has a successful research program
- Be open to doing research that may not be your “expertise”
- Choose a lab doing research that you are passionate about
- Prepare ahead of time in graduate school by learning industry relevant techniques
- You often will need to propose a research plan to be considered for a postdoc in industry
Post-Doc’s

- Postdocs can open up many doors for your career.

- If you plan to be an academic lab head, or head of a research group in industry or a non-profit, a **productive** postdoc is necessary.
Variety of Other Career Paths

Academic
- Technology Transfer
- Grant Administration
- Program Manager
- Alliance Manager
- Clinical Trial Manager
- Teaching

R&D Roles in Industry
- Scientist Bench Roles
- Regulatory Affairs
- Clinical Research
  - Clinical Biomarker Development
  - Clinical Trials
- Medical Affairs
  - Medical Writing
  - Publications

Commercialization Roles in Industry
- Technical Specialist
- Sales
- Business Development
- Marketing
- Product Management
- Project Management
- Alliance Management
- Market Research
- Market Access
- Reimbursement
- Pharmacoeconomics
- Medical Science Liaison
- Medical / Clinical Communications
- Patient Advocacy
Additional Roles

Consulting
- Scientific Evaluation
- Strategic Analysis
- Competitive Landscape
- M&A Analysis
- Financial Valuation
- Partnership Strategy
- Intellectual Property
- Sales Strategy
- Marketing Strategy
- Grant Writing

Pharmacoeconomics
- Pricing Scenarios
- Reimbursement
- Market Assess
- Health economics
- Operations
- Commercialization
- Emerging Markets
- Supply Chain
- Communications

Patent Law
- Technical Specialist
- Patent Analyst (licensed patent agent) (future)

Editor

Venture Capital / Investment Banking
- Analyst
Non-Profit Organizations – such as…

- Research Roles
- Alliance / Project / Program Management Roles
- Grant Administration / Evaluation
- Patient Advocacy Roles
- Licensing / Partnership Roles
http://myidp.sciencecareers.org/
# 20 Different Career Paths

<table>
<thead>
<tr>
<th>Principal investigator in a research-intensive institution:</th>
<th>Scientific/medical testing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent researcher at a medical school, private research institute, government lab or university with minimal teaching responsibilities</td>
<td>Testing specialist in an environmental, public health, genetics, or forensic science setting (intelligence agencies, federal/state departments of justice); clinical diagnostician</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Research in industry:</th>
<th>Science writing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovery or preclinical researcher; manager of a research team or facility</td>
<td>Science, medical, or technical writer or journalist; science editor; science publisher</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Research staff in a research-intensive institution:</th>
<th>Research administration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff scientist or researcher in academia or government, lab manager, director of a multi-user research facility in an academic institution</td>
<td>Research administrator in private or public research institutions, government or academia, including compliance officers, grants and contracts officers; dean or director of research programs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Combined research and teaching careers:</th>
<th>Science policy:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty at a liberal arts college or university whose job includes both research and major teaching responsibilities</td>
<td>Public affairs/government affairs staff at scientific societies, foundations, government entities, or think tanks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teaching-intensive careers in academia:</th>
<th>Intellectual property:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A primarily teaching faculty position in a research university, liberal arts college, community college</td>
<td>Patent agent; patent attorney; technology transfer specialist</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Science education for K-12 schools:</th>
<th>Business of science:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom teacher; curriculum developer; science specialist</td>
<td>Management consultant; business development professional in a biotech company; venture capitalist; market researcher; investment analyst</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Science education for non-scientists:</th>
<th>Entrepreneurship:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education or public outreach specialist such as at a science museum or scientific society</td>
<td>Starting your own business</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinical practice:</th>
<th>Sales and marketing of science-related products:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinician such as genetics counselor, therapist, physician</td>
<td>Medical science liaison; technical sales representative; marketing specialist</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public health related careers:</th>
<th>Support of science-related products:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public health program analyst or evaluator; epidemiologist; biostatistician; medical informaticist</td>
<td>Technical support specialist; field application specialist; product development scientist or engineer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drug/device approval and production:</th>
<th>Clinical research management:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory affairs professional; quality control specialist</td>
<td>Clinical research project/trials manager or coordinator</td>
</tr>
</tbody>
</table>
## Compare Skills Match to People in the Role

<table>
<thead>
<tr>
<th>Career Path</th>
<th>Skills Match</th>
<th>Interests Match</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science education for non-scientists:</td>
<td>81%</td>
<td>83%</td>
<td></td>
</tr>
<tr>
<td>Education or public outreach specialist such as at a science museum or scientific society</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales and marketing of science-related products:</td>
<td>82%</td>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>Medical science liaison; technical sales representative; marketing specialist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science policy:</td>
<td>77%</td>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>Public affairs/government affairs staff at scientific societies, foundations, government entities, or think tanks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business of science:</td>
<td>75%</td>
<td>78%</td>
<td></td>
</tr>
<tr>
<td>Management consultant; business development professional in a biotech company; venture capitalist; market researcher; investment analyst</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research administration:</td>
<td>73%</td>
<td>76%</td>
<td></td>
</tr>
<tr>
<td>Research administrator in private or public research institutions, government or academia, including compliance officers, grants and contracts officers; dean or director of research programs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Scientific Knowledge

<table>
<thead>
<tr>
<th>Scientific Knowledge</th>
<th>Your Rating</th>
<th>Expert Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad based knowledge of science</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.64</td>
</tr>
<tr>
<td>Deep knowledge of my specific research area</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.14</td>
<td>4</td>
</tr>
<tr>
<td>Critical evaluation of scientific literature</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.29</td>
<td>4</td>
</tr>
</tbody>
</table>
### Career Path

#### Science education for non-scientists:
- Education or public outreach specialist such as at a science museum or scientific society

#### Sales and marketing of science-related products:
- Medical science liaison; technical sales representative; marketing specialist

#### Science policy:
- Public affairs/government affairs staff at scientific societies, foundations, government entities, or think tanks

#### Business of science:
- Management consultant; business development professional in a biotech company; venture capitalist; market researcher; investment analyst

#### Research administration:
- Research administrator in private or public research institutions, government or academia, including compliance officers, grants and contracts officers; dean or director of research programs

#### Intellectual property:
- Patent agent; patent attorney; technology transfer specialist

#### Science education for K-12 schools:
- Classroom teacher; curriculum developer; science specialist

#### Support of science-related products:
- Technical support specialist; field application specialist; product development scientist or engineer

#### Teaching-intensive careers in academia:
- A primarily teaching faculty position in a research university, liberal arts college, community college

#### Entrepreneurship:
- Starting your own business

#### Drug/device approval and production:
- Regulatory affairs professional; quality control specialist
Read about Careers

Resources for "science policy"

Articles:
- Science Policy Careers (collection of articles and interviews)
- A Matter of Policy
- Policy Fellowships for Scientists and Engineers (collection of fellowships)
- Careers at Nonprofits and NGOs (collection of articles)

Books:
- Guide to Nontraditional Careers in Science
  (Chapter 10)
  Karen Young Kreeger
  Philadelphia, PA: Taylor and Francis 1999
- Alternative Careers in Science: Leaving the Ivory Tower
  (Chapter 20)
  Cynthia Robbins-Roth
  San Diego, CA: Academic Press 1993
What kind of Organization do you want to work in?
Small Organization
Small Organization

- Research
- Training Scientists
- Grants
- Managing Collaboration
- Interact with Vendors
- Fix machines
- Write SOP’s
- Prepare presentations for Business Group
- Etc…
Larger Organization
Transferable Skills

Graduate School provides you with many skills, in addition to bench work
What Graduate School Teaches You

- Excellent Scientific Foundation!
- Data analysis skills
- Ability to synthesize information/learn new areas
- Ability to ask questions
- Writing ability – abstracts, papers, grants
- Work ethic and drive
- Work independently and be accountable

- Exposure to Clinical Research
- Disease Knowledge
- Management of the Lab
- Training of People
- Grant Writing
- Interacting with Collaborators
- Finding Collaborators
- Starting new Groups / Initiatives
Transferable Skills – “Your Tool Kit”

- Organized
- A networker
- A negotiator
- A leader
- A manager
- A presenter
- An excel guru
- Detail oriented
- Good at writing
- Skilled at programming
- Good at keeping track of projects
- A communicator (written and verbal)
- Good at drawing/other artistic activities
Why is this Important
Building Transferable Skills for Different Roles

- Strong research skills
- Translational research
- Manage / Initiate research collaborations
- Work cross functionally
- Write patents
- Develop business plans
- Write Grants
Building Skills for Different Roles

Research and Development

- Solid Technical Foundation
- Translational research
- Manage / Initiate research collaborations
- Work cross functionally
- Write patents
- Develop business plans
- Write Grants

Intellectual Property
Building Skills for Different Roles

Research and Development

- Solid Technical Foundation
- Translational research
- Manage / Initiate research collaborations
- Work cross functionally
- Write patents
- Develop business plans
- Write Grants

Intellectual Property

Grant Writer / Reviewer / Administrator
Highlighting Skills for Different Roles

Research and Development

- Solid Technical Foundation
- Translational research
- Manage / Initiate research collaborations
- Work cross functionally
- Write patents
- Develop business plans
- Write Grants

Product/Project / Alliance Management

Intellectual Property

Grant Writer / Reviewer / Administrator

Making Connections that Fuel Innovation!
Building Skills for Different Roles

Research and Development

- Solid Technical Foundation
- Translational research
- Manage / Initiate research collaborations
- Work cross functionally
- Write patents
- Intern with startup
- Develop business plans
- Write Grants

Technology Transfer

Product/Project / Alliance Management

Intellectual Property

Grant Writer / Reviewer / Administrator

Making Connections that Fuel Innovation!
Building Skills for Different Roles

**Research and Development**
- Solid Technical Foundation
- Translational research
- Manage / Initiate research collaborations
- Work cross functionally
- Write patents
- Develop business plans
- Write Grants
- Teaching

**Entrepreneurial Organizations**
- Set up a lab (with 1st time PI)
- Develop a new research direction for the lab
- Comfortable with very innovative research
- Wear many hats
- Initiate collaborations
- Write grants, annual reporting
- Write Patents
- Teaching

**Technology Transfer**

**Product/Project/Alliance Management**

**Intellectual Property**

**Grant Writer/Reviewer/Administrator**

Making Connections that Fuel Innovation!
Building Skills for Different Roles

Medical Affairs, Clinical Research
- Translational disease research
- Collaborate with Clinicians/ Medical Teams
- Clinical research
- Clinical biomarkers
- IRB experience
- Regulatory submissions
- Regulatory / clinical courses
- Present a lot
- Teaching

Regulatory
- Develop / improve processes
- Develop SOP’s and protocols
- Train people on techniques
- QC data
- Contribute data to a regulatory filing
- Work with cross functional teams
- Teaching

Making Connections that Fuel Innovation!

Confidential; Not for Distribution. November 6, 2015
Building Skills for Different Roles

Marketing Communications
- Technical & non-technical writing
- Lab Public Relations
- Give Tours / Present
- Blog writing
- Design flyers or marketing materials
- Social Media
- Use programs i.e. Illustrator, photoshop
- Teaching

Strategy Consulting
- Consulting club
- Case competitions
- Business courses
- Leadership roles in organizations
- Tech transfer internships
- Working with cross functional teams
- Presenting a lot
- Strong writing skills
- Teaching

Business Development
- Startup formed from your research
- Tech Transfer Internship
- Collaborative Research
- Develop a business plan
- Secured funding for your research
- Business Course(s)
- Patents
- Networking
- Negotiation
- Teaching
**Building Skills for Different Roles**

**Technical Sales / Application Specialist**
- Manage relationship with vendors
- Manage the purchasing process
- Develop budgets
- Install equipment
- Train people on techniques
- Develop training materials
- Teaching

**Policy**
- Advocate for grad students (i.e. head of grad student association)
- Member of a groups advocacy committee like AWIS or your “professional association, i.e. AACR”
- Member of national postdoc association
- Improve policies within university
- Teaching

**Data Science Roles**
- Quantitative Skills i.e. SAS, STATA, R
- Data visualization tools
- Programming languages
- “big data analytics”
Leadership skills are always valuable!

- Have you taken leadership roles within your institution?
- Are you involved in a leadership role in a local or national chapter of a networking group or non-profit?
  - AWIS, AAPS, ACS, WEST, HBA, JDRF, etc.?
- Get involved with MGH Graduate Student Division
- Do Community Service
Communication Skills are always valued

- Presentations at meetings
  - local, regional, national, international
  - lab meetings
- Teaching experience
- Leadership experience in organizations
- Toastmasters

- Papers
- Grants
- Journal reviewer
- University paper
- Industry association / conference
- Personal Blog
How to Identify Roles
Talk to People

- Not all Roles are Posted
  - Talk to your PI for advice / referrals
  - Talk to former classmates / lab mates
  - Talk with people in the career area you are looking to be in

- Utilize Conferences
  - Career Fairs
  - Poster Sessions
  - Exhibit Halls
Informational Interviewing

How to find the right opportunity:

Definition: An informational interview is an interview conducted to collect information about a job, career field, industry or organization.

It is not a job interview. Rather, it's an interview with an individual working in a career you would like to learn more about.
What to ask about

**Particular Job**
- Responsibilities
- Day to Day
- Like
- Dislike
- Growth potential
- Skills needed

**Organization**
- Culture
- Work Environment
- Management Style
- Growth Potential
- Personality Fit
- Skills needed
- Skills valued

**Career Progression**
- Growth Opportunities
- Career Path
- Skills to Develop

**Career Entry**
- How to get in a role
- Networking
- Experience required
- Skills needed
- Skills one can learn
- Best way to enter field
When reading through a job description, look at the qualifications and compare with your background.

**Qualifications**

- The candidate must have a Ph. D. in Molecular Biology, Biochemistry, or a closely related field, preferably with oncology/immunology experience.
- Hands-on experience with molecular biology (including recombinant DNA construction, RNA quantification using RT-PCR, transfection, western blotting techniques, etc) and cell biology (such as maintenance of variety of cell lines).
- Experience with protein purification, enzymatic characterization and inhibition assays desirable.
- Excellent written and oral communication skills.
- He or she should be highly motivated, productive and team oriented with demonstrated ability to work independently and to solve problems as they arise.
# Develop a Skill Building Plan Using Details from Job Postings

<table>
<thead>
<tr>
<th>Item</th>
<th>Must Have</th>
<th>Nice to Have</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific research experience – i.e. ChIP-seq</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Experience training people</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Experience with Budgeting</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Specific Disease Knowledge – i.e. Immunology</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Clinical Research Experience</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Which Title is Relevant to you?

- When reading through a job descriptions, make a list of job titles relevant to your background

- i.e. Research Roles
  - Scientist
  - Sr. Scientist
  - Scientist I
  - Scientist II
  - Research Scientist
Use LinkedIn To Identify People in Roles you are Interested in

Making Connections that Fuel Innovation!
Look at Profiles to View Backgrounds

- **Gene**: 1st Connections
  - Scientist at Dyax
  - Greater Boston Area · Biotechnology
  - 14 shared connections · Similar · 344

- **Dong**: 1st Connections
  - Scientist II at Biogen Idec
  - Greater Boston Area · Biotechnology
  - 26 shared connections · Similar · 500+

- **Jaison**: 1st Connections
  - PhD
  - Biotechnology Professional
  - Greater Boston Area · Biotechnology
  - 74 shared connections · Similar
  - Current: Senior Scientist at Olympus Biotech America

- **David**: 1st Connections
  - Senior Scientist at RaNA Therapeutics
  - Greater Boston Area · Biotechnology
  - 15 shared connections · Similar · 235

- **John**: 1st Connections
  - Associate Principal Scientist at Merck
  - Greater Boston Area · Biotechnology
  - 8 shared connections · Similar

---

**Making Connections that Fuel Innovation!**

Confidential; Not for Distribution. November 6, 2015
Job Search Timelines

- **Industry postdocs / academic postdocs**: Some with defined dates, others rolling. Start planning at least 6 month before you want a role.

- **AAAS fellowships**: Nov 1 2015 application deadline, start in Sept 2016

- **Industry Research Roles**: Desired start 1-3 months after role is posted

- **Large Consulting / Investment Banks**: apply Fall 2015; start ~ June 2016

- **Boutique consulting firms / investment banks**: Some fall application process, other rolling hiring
Contact Details: Connect with Propel

Lauren Celano
Founder and CEO
Propel Careers
cell: 215-370-2285
e-mail: Lauren@propelcareers.com

Twitter: @Propel_Careers
Facebook: Propel Careers
LinkedIn: Propel Careers
Web: www.propelcareers.com