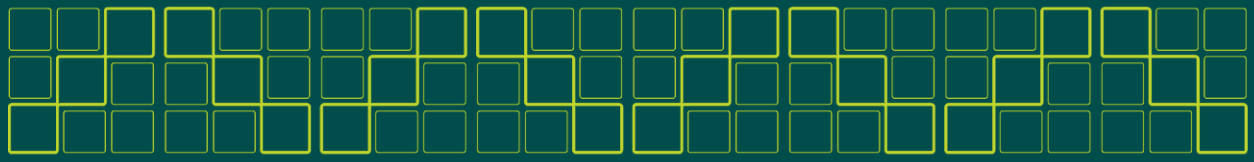
Industry Careers

Lori M. Conlan, PhD
Director, Office of Postdoctoral Services
and the Career Services Center



The Elephant- things are weird…. but you still can prepare (eventually we all need a job ☺)

Trends

- From 1980-2010
  - Search for blockbuster drugs
  - Industry consolidation
- From ~2007
  - Inefficient R&D
  - No blockbuster drugs
  - Patent cliff
  - Recession
- New strategies
  - Downsize
  - Acquire technologies (not companies)
  - Switch from blockbuster to market opportunities
  - Reduce costs

Trends

- **Innovation is being driven via collaboration from multiple industry stakeholders:** The emergence and development of new tools like nanosensors, bi-specific antibodies, and computational biology have highlighted the success that can be achieved from collaboration
- **Technologies are being adopted to advance drug research:** budgets will continue to increase to allow for new technological advances, including the use of artificial intelligence in R&D decision making. Also new devices (ie diabetes monitors)
- **New types of research are coming to the forefront:** Research in precision medicine, immunotherapy, and the microbiome are opening up new discovery pathways.
- **Digitization of R&D and healthcare will increase:** R&D functions are already beginning to adopt large-scale use of cloud-based platforms, but this will accelerate this year.
- **Academia is increasingly contributing to biologics R&D:** significant contributions to scientific innovation across genetic and cellular therapies, with antibodies, CAR-T, and CRISPR-Cas9, etc

https://www.genengnews.com/news/key-life-science-industry-trends-in-2019/

https://www2.deloitte.com/us/en/pages/life-sciences-and-health-care/articles/us-and-global-life-sciences-industry-trends-outlook.html

What is different about industry?

- Matrix teams
- Deadline driven
- Results driven
- Money driven
- Resources rich
- Protect intellectual property

What's Out There?

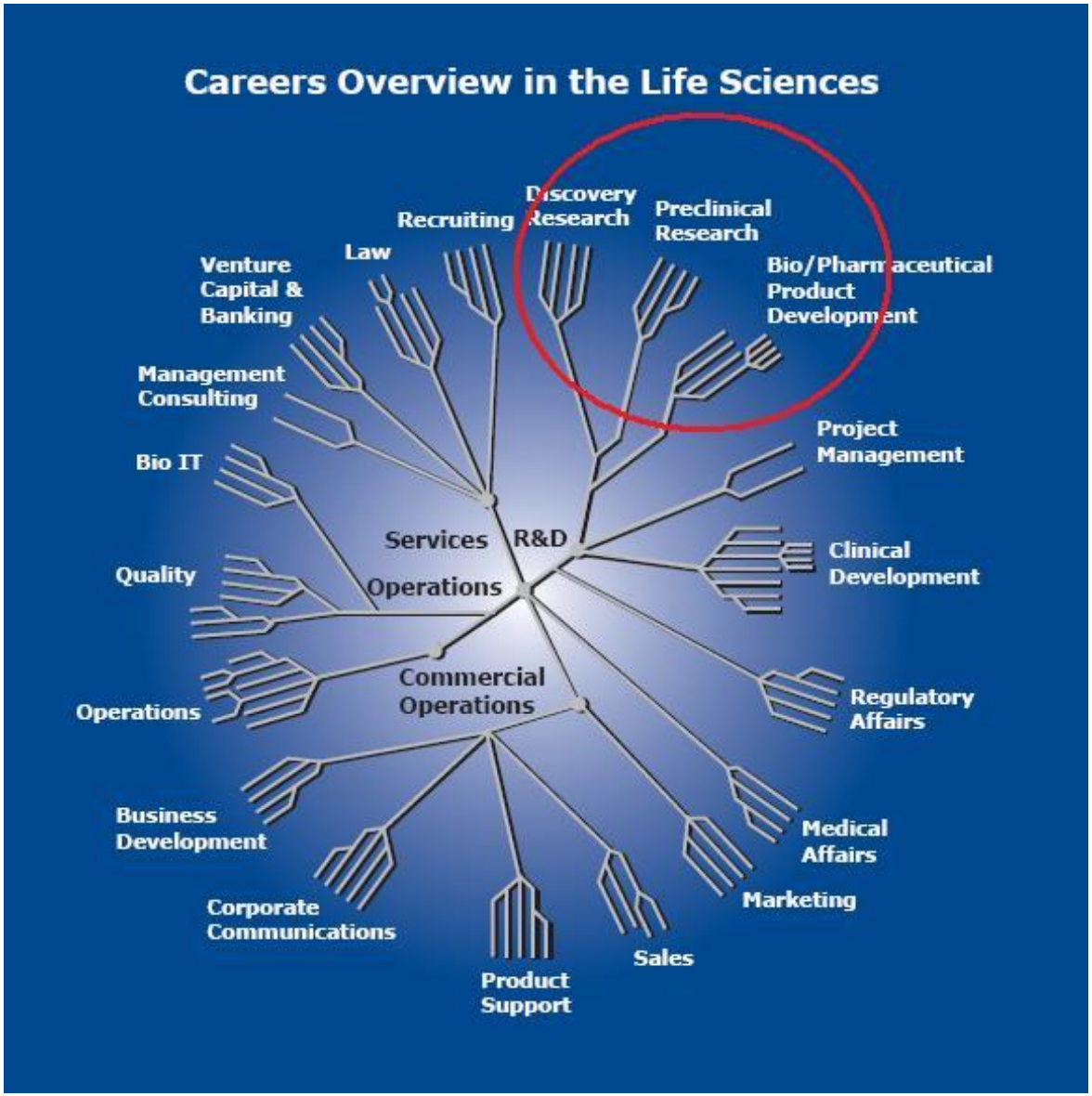
- Kinds of Companies
  - Pharma (including generics)
  - Biotechs
  - Science supply
  - Medical Devices and Diagnostics
  - Service Providers: Contract Research Organizations, Regulatory, Marketing/analytics
  - Venture cap/investors
  - Non-profits, NGOs

Where are the Jobs?

Mega-companies	Annual revenues greater than $10B 70,000+ employees worldwide
Large Companies	Annual revenues between $1B - $10B 2500 - 70,000 employees
Medium Companies	Annual revenues between $500M -$1B 100 - 2500 employees
Small Companies	Annual revenues between $100M - $500M 20 - 100 employees
Early Stage / Start-ups	Annual revenues between $0 - $100M 1 - 20 employees

Example Companies

	Mega	Large	Mid-size	Small	Early Stage/ Start-up
Pharmaceutical	Pfizer BMS GSK	Medimmune Teva B. I.	Endo Eisai Millennium	Macrogenics Purdue	Vanda
Biotech	Amgen	Celgene	Shire HGS	Vertex Alexion	Achillion GlycoMimetics NovaVax
Device	J & J	Baxter	Covidien	PPG	
Consumables	GE	Thermo Fischer Scientific	Life Technologies	Qiagen OriGene	
Contract Organization	Quintiles Covance	PPD	Accelovance	Westat	KAI Research, Inc.



From Toby Freedman

Office of Intramural TRAINING & EDUCATION
NATIONAL INSTITUTES OF HEALTH

Opportunities in R & D

Discovery	Drug discovery research; also positions in life sciences companies that provide platform technologies, instruments, reagents and medical devices. **Qualifications: PhD with some specialization in post-doctoral work**
Preclinical	Conduct research to identify, synthesize and characterize new drug candidates**. Qualifications: PhD with some specialization in post-doctoral work**
Clinical	Conduct research to test drug safety and efficacy in humans**. Qualifications: Involvement in clinical trial planning, protocol development or evaluation, execution and monitoring of clinical trials.**
Project Mgt.	Ensure that projects are moving forward according to pre-established timelines, scope and budget**. Qualifications: MD/PhD with project management experience**
Bio-Pharm Product Devel.	Creating, formulating and manufacturing drug products. **Qualifications: PhD and formulation experience**

Office of Intramural TRAINING & EDUCATION
NATIONAL INSTITUTES OF HEALTH

Opportunities in Commercial

Marketing	The development and communication of product strategic plans to achieve objectives. **Qualifications: BS/BA/MBA**
Sales	Interact with customers to generate revenues and provide education. **Qualifications: BS/BA and sales experience**
Business Development	Identify and consummate deals that further the company's strategy**. Qualifications: BS/BA/PhD in select therapeutic areas**
Corp. Comm.	Generate interest in a brand and faith in company's ethos. **Qualifications: Ability to "distill" technical information for a variety of audiences**

Opportunities Between R&D and Commercial

Product Support	Provide technical support to enable customers to use products correctly and successfully**. Qualifications: MD or PhD with product / therapeutic expertise**
Medical Affairs	Provide medical and scientific support for company's marketing effort. **Qualifications: MD, PhD or PharmD**
Regulatory Affairs	Ensure that discovery and development processes are consistent with regulatory processes**. Qualifications: MD or PhD with knowledge of Agency requirements**

Opportunities In Operations

Operations	Ensure smooth operations of all processes; manufacturing**. Qualifications: BA / BS or MBA, promotional position for those with advanced science degrees**
Bio IT	Systems validation, data management, algorithm and software development. **Qualifications: BA / BS with computer skills**
Quality	Ensure products are consistent and that all company processes comply with agency standards**. Qualifications: BS / BA, PhD is common in supervisory roles**

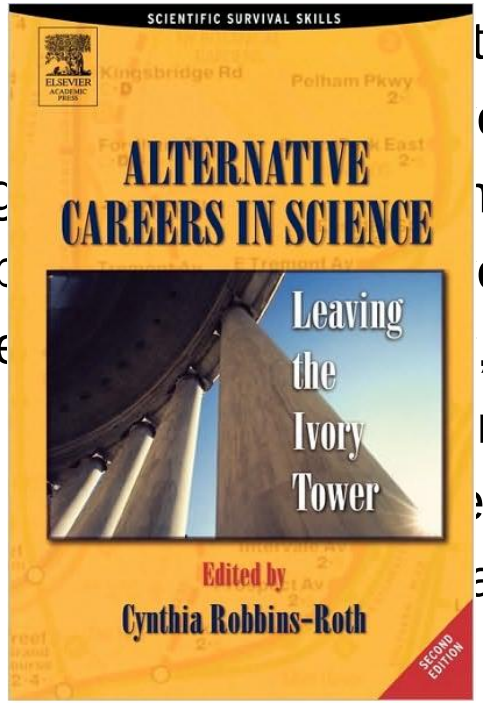
Opportunities in Services

Virtually all functions within a company can also be outsourced to a contract provider; i.e. Development, Regulatory, Manufacturing, Medical Affairs, Marketing, Sales, Product Support, Legal etc. Qualifications: similar to those for the internal functions

Agencies	Discovery, research, development and regulatory responsibilities performed in Government supported labs**. Qualifications: MD or PhD**
Management Consulting	Provide strategic and technical advice to company management. **Qualifications: MD's and PhD's generally for technical and subject matter expertise**
Health Care Finance	Evaluate technologies to support or reject capital investment. **Qualifications: MD or PhD with a knowledge of business operations**
Recruiting	Match qualified candidates with job opportunities. **Qualifications: MD's and PhD's can be beneficial in recruiting for technical and scientific positions**

If you like

- Benchwork
- Details
- Financial data
- Organizing thing
- Influencing peop
- Looking at hot te
- Being creative
- Writing
- Speaking



Then look at:

- R&D, manufacturing, QC/QA, toxicology/safety

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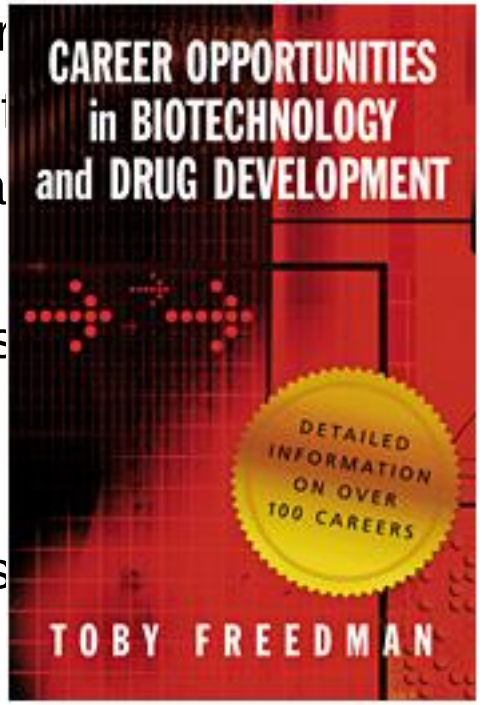

Where the Opportunities Are Likely to Be

Research Positions	Predominantly in biotech and early-stage
Development Positions	Mid- to mega-companies and CRO's
Business Development	Out-licensing - Smaller companies and early-stage In-licensing - Larger companies
Medical Affairs	Larger companies with marketing and launch products
Regulatory Affairs	Service org, Mid- to mega-companies and FDA
Product Support	Larger companies with marketing and launch products
Quality	Companies with manufacturing and Contract Manufacturing Organizations
Management Consulting	Consulting companies

Salary Data-MedImmune/AZ

Research Associate I	$69725	BS
Postdoctoral Fellow	$67585	PhD
Research Associate II	$68680	BS/MS
Associate Scientist I	$76957	MS (maybe BS)
Associate Scientist II	$93245	MS(maybe BS)
Scientist I	$104224	PhD/MD
Scientist II	$131180	PhD/MD
Project Manager	$127790	
Senior Manager	$141968	PhD/MD
Senior Scientist	$152643	PhD/MD
Director	$201668	PhD/MD

Data from glassdoor.com. Updated 2019

Skills Recruiters Seek

1. Communication
2. Problem solving
3. Team work
4. Self motivation
5. Initiative
6. Logical thinking
7. Ability to work under pressure
8. Time management
9. Work ethic
10. Dependability
11. Adaptability
12. Leadership
13. Organization
14. Self confidence

Reference: Monster 2011 Biotech Job Conditions Report

From Astra Zeneca

- Astra Zeneca wants people who are:
  - Swift to action
  - Agile and resilient
  - Confident to lead
  - Open to collaboration
  - Curious and inspired
  - Brave
  - Focused
  - Take ownership

Finding a Job

- Identify companies with money and/or cash infusions
  - Fierce, BIO, LifeSciVC
- Identify companies with R&D projects that interest you
  - Pubmed, googlepatent, conference presentations
- Identify companies in an area you would like to live
- Build a Network- university alumni, NIH Alumni database, LinkedIn
- Prepare an industry resume

Resumes

- Biggest question—WHO is reading your resume?
  - Computer = keywords
  - HR = eligible for hire? experience match need?
  - Hiring manager = have required skills? can do job well/quickly/cheaply? will make life easier?

CV ≠ Résumé (Exhibit A: Jane Doe)

Academic CV

CURRICULUM VITAE

Name: Jane Doe, Ph.D.
Home Address: 123 Deer Drive, Nashville, TN 37232
Work Address: Center for Fabulous Science
Department of Biochemistry
1234 Medical Research Building
Vanderbilt University Medical School
Nashville, Tennessee 37232-0700
Tel.: (615) 555-5555
Fax: (615) 555-1234
E-mail Address: Jane.Doe@Vanderbilt.edu

EDUCATION

2007, PhD — Vanderbilt University (Biochemistry)
Dissertation: "Title"
Advisor: Dr. Raul Smart, Ph.D.
2007, MS — Vanderbilt University (Applied Statistics)
2003, BS — Murray State University (Biology)

POSTDOCTORAL TRAINING

2007-2008 — Postdoctoral Fellow, Department of Biochemistry, Vanderbilt University,
Advisor: Dr. Earnest Nobel, Ph.D.

ACADEMIC APPOINTMENTS

2008-present — Research Instructor, Department of Biochemistry, Vanderbilt University,

MAJOR RESEARCH INTERESTS

Statistical Genetics
Genetic Epidemiology
XXXX
XXXX

HONORS, AWARDS, AND PATENTS

2009 — PCT/US09/0XXXX "Methods and Compositions for Diagnosis of XXXX Disease".
2007 — Genetics Research Foundation, Wealthy Donor Travel Scholarship
2005-2006 — NIH Training Program: XXXX
2003 — Graduated Summa Cum Laude, Murray State University

Résumé

Résumé formatted for a non-research position

JANE DOE, PHD
123 DEER DRIVE, NASHVILLE, TN 37232
(615) 555-5555
JANE.DOE@GMAIL.COM

WORK EXPERIENCE

VANDERBILT UNIVERSITY
RESEARCH INSTRUCTOR — **2008-Present**

- Led working groups of 10-12 people to study genetics of XXXX disease, age at menarche, and age at menopause as part of the XXXX consortium.
- Led and performed statistical data analyses for manuscripts and oral presentations to the scientific community.
- Collaborated with a team of 84 investigators from 4 study sites to research genetics of type II diabetes, gout, and cancer as part of the XXXX consortium.
- Managed masters-level statistician.
- Authored or co-authored 16 scientific articles and 12 meeting abstracts on the genetics of complex human diseases.
- Invited to serve as peer reviewer for 7 journals and 1 international grant foundation.
- Taught a XXXX class of 8-10 graduate students. Focused on active learning and providing formative feedback to students. Guest-lectured in 7 other classes, with students from a range of backgrounds, including high school students, community college students, graduate students, and medical fellows.
- Managed in-depth curriculum review and ongoing evaluation of the Ph.D. Program in XXXX. Prepared documents for the External Advisory Board for the XXXX Training Grant, the major funding source of program.

POSTDOCTORAL FELLOW — **2007-2008**

- Developed and patented algorithm to identify individuals at high risk for XXXX disease based on their genetic profile. Invited to give a platform presentation about this work at the American Society of Human Genetics annual meeting.
- Awarded the XXXX Research Foundation XXXX Travel Scholarship to attend the Association for Research in Vision and Ophthalmology annual meeting.
- Graduated from an intensive, 18-month Teaching Certificate Program sponsored by Vanderbilt University Center for Teaching. Developed and orally presented research findings on a scholarship of teaching and learning project.

EDUCATION

VANDERBILT UNIVERSITY — **2007**

- Ph.D. in Biochemistry
- M.S. in Applied Statistics

Thanks to Kim Petrie @Vanderbilt

Components

- Summary of qualifications
- Contact information
- Education
- [Post-grad education]
- Certifications/Licensures
- Research/Employment history
- Teaching/Mentoring
- Leadership
- Honors and awards
- Service
- Memberships
- Grant support
- Major invited speeches
- Patents/Inventions
- Publications

* Not exhaustive; order can vary; component titles can be personalized

- RESUMES: Summary of qualifications and Skills

Summary/Objective Statement

- Typically only for resumes
- First (and easiest) place to adjust for job ad

- ~~Seeking a responsible position in an industry lab doing cancer research.~~
- Cancer Biologist with 10 years of experience managing multiple projects in the following areas:
  - 6 years experience in mouse models of prostate cancer
  - 4 years experience in yeast as a model system for cancer genetics
  - Supervision of lab personnel
  - Management of lab budget

Research/Work History

- Describe what you have done, in a way that is relevant to the job you are applying to.
- Do X to understand Y

2002-2006

Postdoctoral Researcher

Wadsworth Center, New York State Department of Health, Albany, NY

- Explored group II intron mobility pathways and mechanisms to understand how DNA can insert into non-ideal locations

Skills and Techniques

- Not a laundry list!
- Keep computer filters in mind
- Organize
  - *Biochemistry*: protein purification, Western blotting, *in vitro* cell-free extracts, spectroscopy, electrophoresis
  - *Cell biology*: cell culture (bacterial, insect, mammalian), flow cytometry, immunofluorescence
  - *Microscopy*: light microscopy, epifluorescence microscopy, confocal microscopy
  - *Molecular biology*: gene cloning (prokaryotic and eukaryotic), PCR, Southern blotting

Communication Skills

- What we normally see:
  - Excellent verbal and written communication skills
- What you should say:
  - Presented X posters and Y talks at (Inter)National meetings
  - Presented talks to various audience type (examples)
  - Wrote SOPs, journal articles, reviews, lay-audience articles, etc.
  - Edited lab grant and manuscripts before publication
  - Facilitated a group discussion as seen by….
  - Negotiated a …..
  - Speak X, a valuable asset in this job

Skills Recruiters Seek

1. Communication
2. Problem solving
3. Team work
4. Self motivation
5. Initiative
6. Logical thinking
7. Ability to work under pressure
8. Time management
9. Work ethic
10. Dependability
11. Adaptability
12. Leadership
13. Organization
14. Self confidence

Reference: Monster 2011 Biotech Job Conditions Report

Mentored 3 Undergraduate Students

- Industry
  - Responsible for hiring, supervision, and performance review of three junior scientists
- Science Administration
  - University of Pittsburgh's Girls in Science mentor for high school and undergraduate students from underrepresented groups, 2010 through 2012
- Consulting
  - Effectively communicated and transferred complex technical information to junior personnel. Used expertise to assist junior personnel with problem solving.
- Project management
  - Empowered project staff to meet quality standards, use resources effectively and deliver tasks on time.

Career Symposium Committee Member

- Industry
  - Developed novel strategy for workshop designed to expose scientists to careers in the biotechnology industry. Identified experts, gained stakeholder buy-in, implemented plans in accordance with time-lines and budget restrictions.
- Science Policy
  - Interpreted and applied administrative guidelines regarding financial management, procurement, facilities use. Facilitated communication between established career professionals and junior scientists
- Science Administration
  - Organized career and professional development symposium attended by 4,000 graduate students and postdoctoral scientists. Symposium highlighted 16 different career tracts and included 25 workshops on various professional development skills including networking, using linked-in, and preparing resumes.

Developed Transgenic Mouse Model

- Industry
  - Developed a cystic fibrosis transgenic mouse model that resulted in 8 peer reviewed publications and $3.6 Million in grant funding.
- Project Management
  - Developed strategy and implemented 2.5 year $1.3 M project in collaboration with institutional core facility and external academic partner. Project resulted in $3.6 M in additional funding.
- Regulatory Affairs
  - In collaboration with institutional Animal Care and Use Committee (IACUC) and Biological Safety Committee submitted and gained all necessary documentation to develop transgenic mouse model for cystic fibrosis. Documents were completed 6 weeks ahead of schedule.

Questions to ask yourself

- What were my job responsibilities?
- What were my major accomplishments?
- What skills did I develop?
- What decisions did I make?
- How did I work with and motivate people?
- How can I quantify my results?
- How did I communicate in my job?
- Did I assume a leadership position?
- How did I make a difference in the position?

Cover letters

- First Paragraph-
  - How you found the job
  - Basic info on yourself
- Second:
  - Why you are interested in position/employer
  - Why the employer does good work (homework)
  - How you best fit the position
- Third:
  - Interesting in interviewing
  - Follow-up
  - Thanks them for their consideration

- Homework on the To:
  - Note degree

- Dear Hiring Manager,
  - I saw your ad for a Product Manager/Developer: RNA Enzymes/PURE - 6071RG on the New England Biolabs website. I am currently a postdoctoral fellow in Marlene Belfort's lab at the Wadsworth Center, New York State Department of Health.
  - I have extensive experience in restriction enzyme biochemistry, and have had ongoing collaborations with scientists at NEB, including Paul Riggs. I am very familiar with the science at NEB, and am extremely impressed by not only the high quality products that the company produces but also with the academic atmosphere of the research and development centers. My specialty is in protein-nucleic acid interactions, with an emphasis in exploring enzyme mechanisms. As a postdoc I expanded my scientific skills to include RNA biology, including RNA purification and analysis. I have a strong background with high quality *in vitro* protein synthesis and purification, including media modifications and preparations of quantities needed for biophysical and structural characterizations. I excel in improving and developing research programs as seen by incorporation of novel techniques to examine DNA binding and cleavage by restriction enzymes and the use of new system to monitor the fidelity of the group II intro reverse transcriptase. I took a strong leadership role in the lab to ensure coordination of chemical inventory and ordering systems. I have excellent organizational skills as noted by completion of 8 peer reviewed papers with the participation of technicians and students that I supervised. Additionally, I have a strong attention to detail. My diverse background in DNA/RNA-protein biochemistry would be a terrific fit for this position.
  - I look forward to continuing this conversation in an interview. I will contact you by X date to follow up on this application. Please feel free to contact me at anytime, the best method is by email atgghhg. Thank you for your consideration.

General Thoughts

- Keep a master activities/accomplishments document as you go along
- There is no template, but your document must be clean, crisp, and easy to read
- Real estate matters –put most important things at the front
- Double and triple-check for typos
- Lots of eyes are helpful –your faculty,mentors, colleagues
  - But appreciate opinions will vary and data argue that there are many “right ways”
  - Best opinions are from “insiders” with a lot of experience

Common industry myths

- Industry does not do good science
  - Great science happens- they put those drugs into people
- No scientific freedom
  - Yes and no, you may have a defined project goal, but you can decide scientifically how to get there
- Your project can get yanked from you
  - Yes and no, priorities change and you may have to change too
- No job security
  - Yes and no, but once you have experience the next job is easier

Other OITE stuff on industry

- BLOG Posts
  - Where Do I Begin? Industry Careers for Scientists
  - Science Careers in Industry: Top Ten Myths
  - The Industry Job Search is a Marathon, Not a Sprint
  - In Industry, It's About More Than Just Salary
  - Industry vs. Academia: Which is Right for You?

- YouTube Videos
  - Resumes and Cover Letters
  - The Business of Science
  - Career Opportunities
- Videocasts
  - Top 10 List: Things Scientists Ask about Finding an Industry Job Industry Careers Overview and Job Packages
  - An Overview of Careers in Industry for PhD Scientists
  - The Industry Job Search: Navigating the Application Process
  - Industry: Interviews
  - Business Etiquette (NIH only)
  - Making the Transition to Industry

More resources

- Join our Listserv to get info while you are not at the NIH
  - Go to www.training.nih.gov to sign up.
- Connect with me on Linked-In and join the NIH Intramural Science Linked-In group
- Watch previous OITE career workshops, including many on CVs, resumes and cover letters
- Read the OITE Careers blog
- Join the OITE NIH Training Alumni database if you are/were a student or fellow here
- Email me at conlanlo@mail.nih.gov

Research Associate II, Formulation/Associate Scientist I, Formulation ($60-$65K)

- The candidate will be tasked with the characterization and formulation development of monoclonal antibody and novel molecule therapeutics, with a primary responsibility of supporting late stage formulation development activities. Preference will be given to those with experience in standard protein formulation development and characterization techniques (SEC, RP-HPLC, IEF, HIAC, and MFI, etc.), along with a fundamental understanding of the basic methodologies and practices of protein formulation. Experience with protein/peptide formulation, lyophilization, and protein characterization is a plus, but not required. The candidate will make detailed observations, analyze data, interpret results, maintain documentation, and prepare precise technical reports, summaries and protocols under supervision. The candidate is expected to present findings at internal meetings and contribute to the preparation of manuscripts, posters, and patent applications to highlight scientific achievement externally. The candidate also must be able function effectively as a member of a larger project and cross-functional teams as required.

  Position Requirements
  For the Research Associate II level, we require a BS degree with 2 - 5 years of relevant experience or an MS with 0 - 2 years of relevant experience. For the Associate Scientist I level, we require a BS with 5 - 8 years of relevant experience or an MS with 2 - 5 years of relevant experience.

- Scientist I, Cell Line Development/Associate Scientist II, Cell Line Development ($90K) Medimmune

  The successful candidate will develop stable production cell lines for therapeutic antibodies or other protein pharmaceuticals using mammalian cell lines (CHO and NS0). In addition, responsibilities will include: being a leader in technology development projects including some or all of the following: improving the molecular biology technologies involved in cell line development; implementing recombinase-mediated targeted integration of expression cassettes; developing high-throughput robotic procedures for clonal cell line generation, expansion and evaluation; flow sorting to clone or enrich high-expressing populations; developing automated data management systems; as well as microarray or protein array profiling of cell lines to diagnose expression bottlenecks. You will maintain knowledge of current cell culture literature, presenting and publishing results inside and outside MedImmune. As a team player in our department, you will maintain the laboratory and some of its equipment and provide technical support for upstream processes in therapeutic protein manufacturing and research groups. You will keep detailed and accurate records of your work. You will author and review SOPs, batch records, development reports, regulatory filings and assist in other areas as needed, including operating bioreactors.

- Position Requirements We can hire this position at the Scientist I or the Associate Scientist II level. For Scientist I: Ph.D. 0-3 years industry experience, or M.S. degree plus 8-10 years industry experience, or B.S. degree plus 10-13 years industry experience. For Associate Scientist II: B.S. plus 8-10 years industry experience or M.S. plus 5-8 years