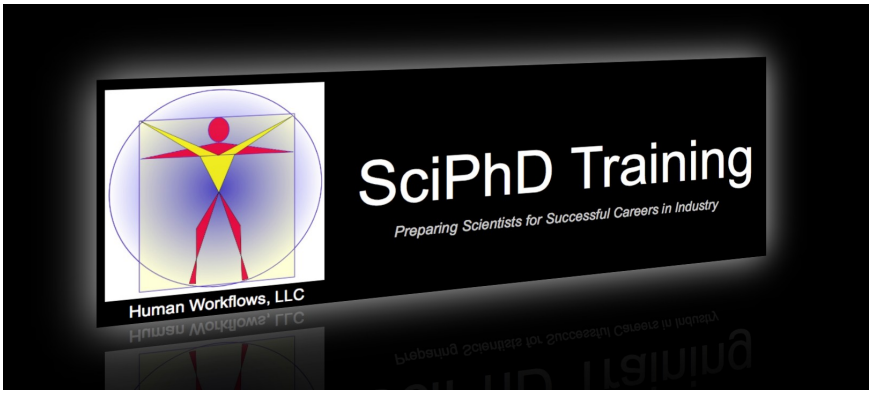

SciPhD Training Program

Preparing for Industry Careers

Workshop Handout and Notes

Randall K. Ribaudo

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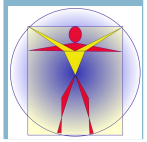
Outline for Today

- The realities of the job market
- What's available in "Industry"
- How do I relate my skills to those valued in "Industry"?
- How do I best prepare myself to get a job in "Industry"



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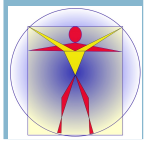
Dispelling the Myths

- I can’t publish in Industry
- Research is technical and boring
- I’m overqualified and under-experienced
- Industry is the “Dark Side”



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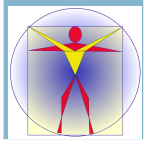
The Value of your Work

- Important
- Quick path to market
- Makes an impact on peoples lives



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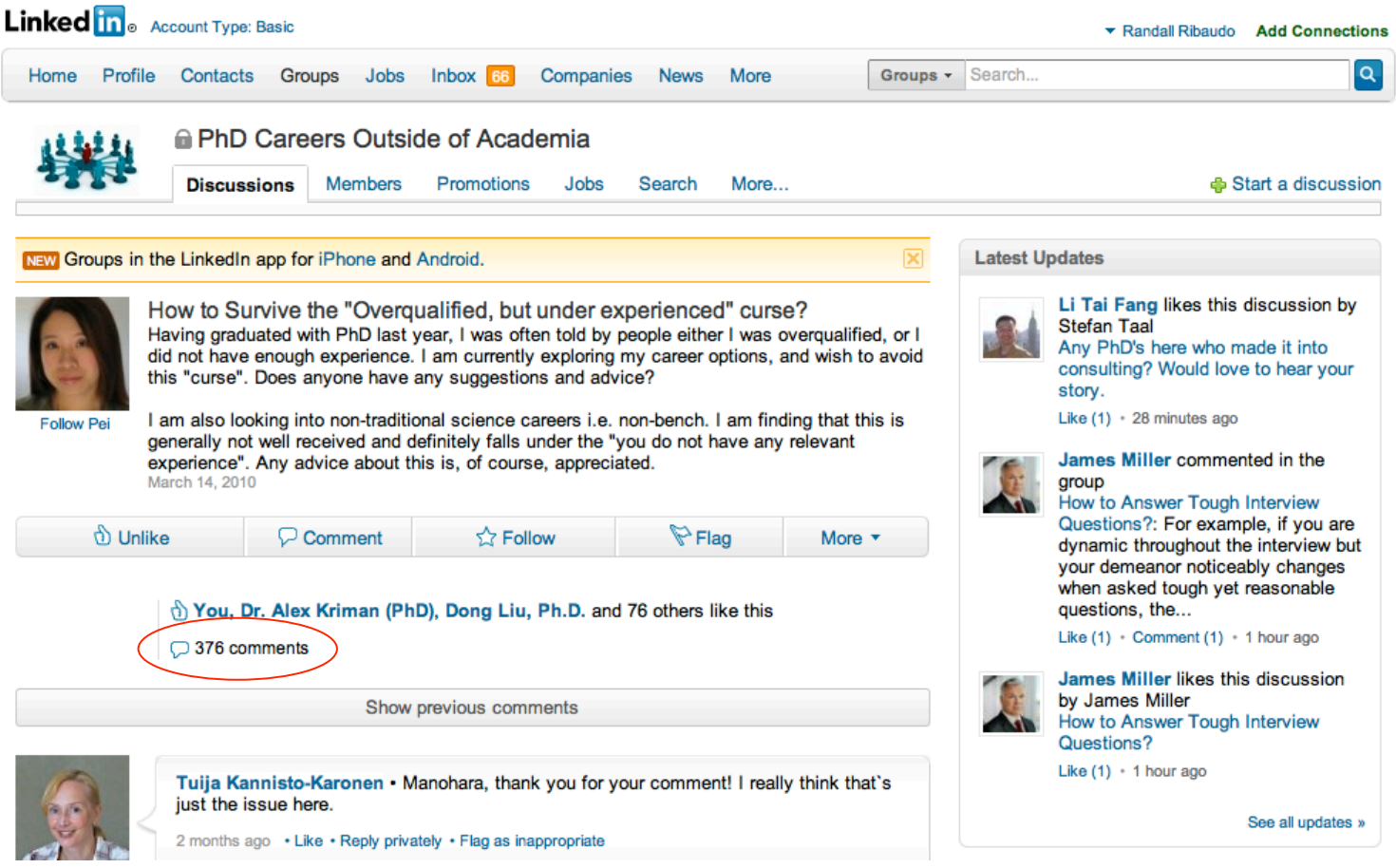
Combating the “Over-experienced and Under-qualified” Curse



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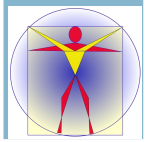
What are we going to do?

- Business Competencies
- Relationship to your experiences
- How to use those experiences in:
  - Resumes
  - Cover Letters
  - Interviews
  - Career Planning



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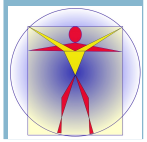
Job Example: Senior Scientist, Antibody Engineering

Job Description

The candidate will lead a group focused on the establishment and development of innovative recombinant antibody engineering technologies. He/she will develop novel technologies in the areas of antibody discovery to support HGS therapeutic protein and antibody programs in autoimmune, oncology and infectious disease areas. In addition, the candidate will manage internal collaborations with other HGS research and development groups on relevant projects as well as external collaborations/contracts with current or future HGS partners.

Desired Skills & Experience

A PhD in Chemistry, Biochemistry, Molecular Biology or a related field is required in addition to a strong publication record in peer-reviewed journals, demonstrating significant postdoctoral and independent research. The candidate must also have at least five years of demonstrated successful leadership of an academic or industrial research lab group (research associate and Ph.D. scientist) with managerial skills and be able to independently plan, design and execute experiments as well as follow literature, interpret results and direct new approaches. He/she should be passionate about new engineering technologies and have hands-on experiences with all modern molecular biology techniques. The candidate should have broad knowledge of antibody structure and function and have extensive expertise in antibody/protein engineering. The candidate should also have good knowledge of the relevant literature and be able to develop creative solutions to scientific problems. Experience in the application and development of protein and antibody phage/yeast or attentive display methods and high throughput screening/selection are preferred. Strong interdisciplinary problem solving, communication, presentation and writing skills are essential.



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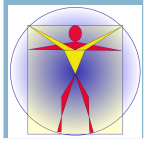

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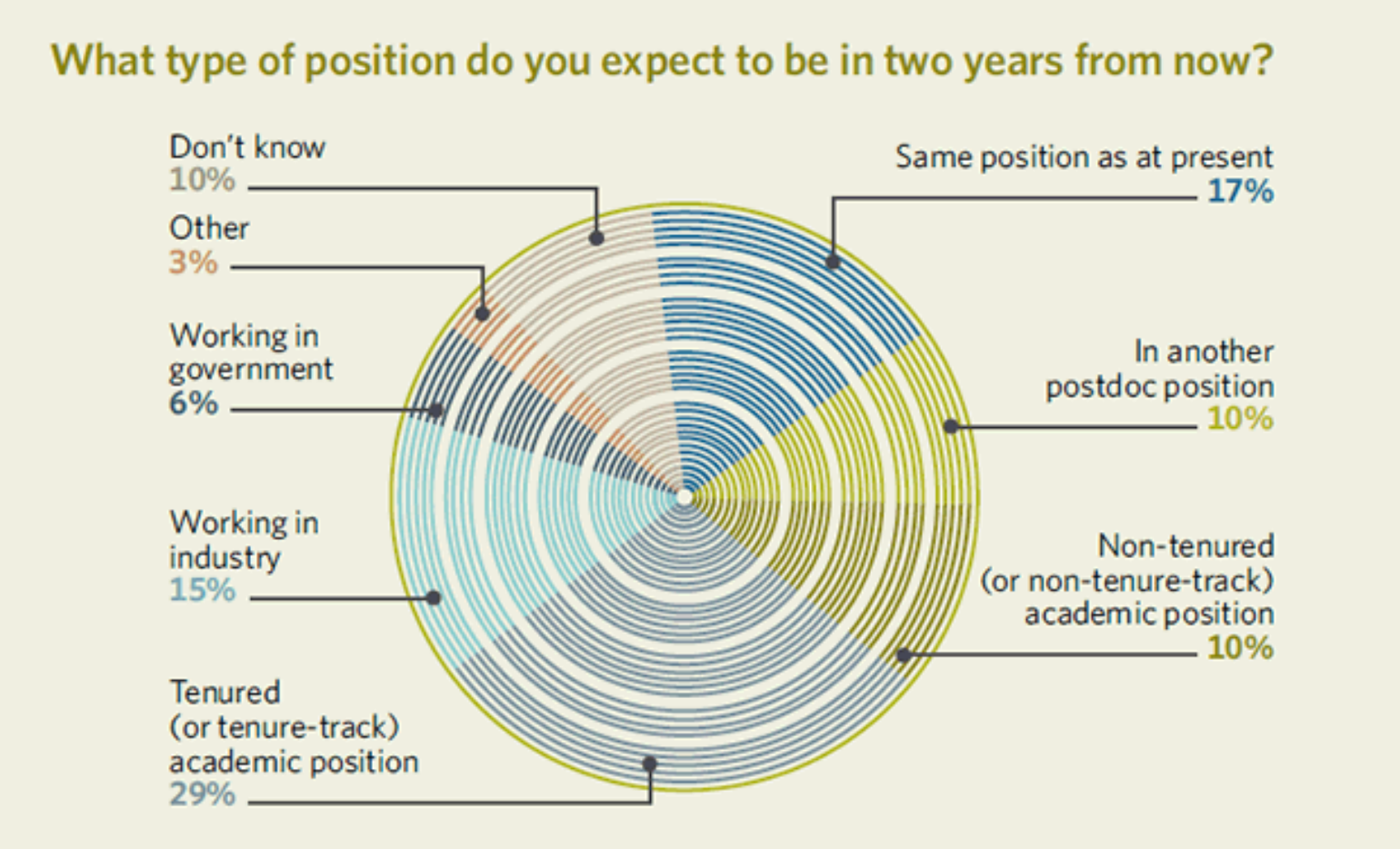
Perception vs. Reality



Source: The Scientist: March, 2010

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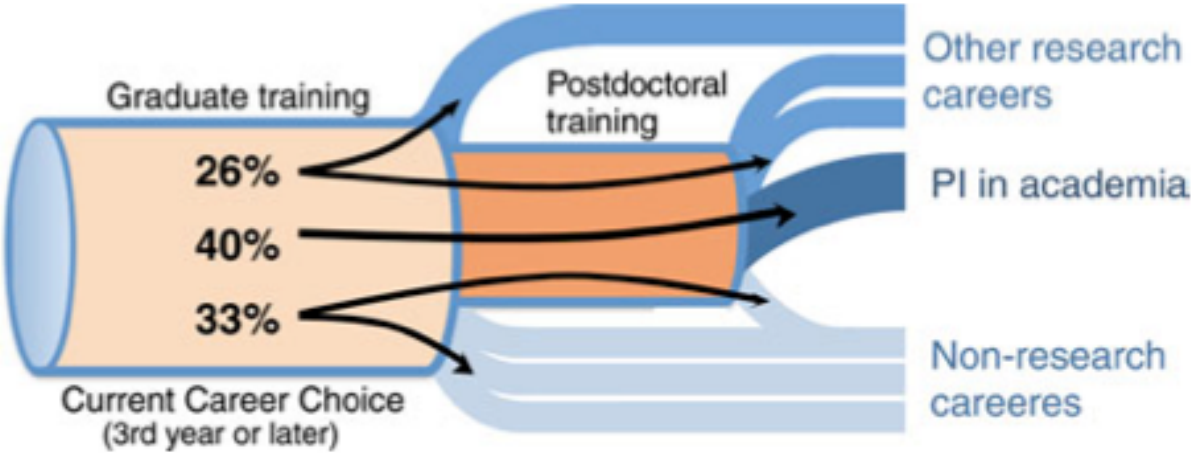
The Changing Career Preferences of Students



Source: Fuhrmann et al.
CBE– Life Sciences Education, Fall 2011

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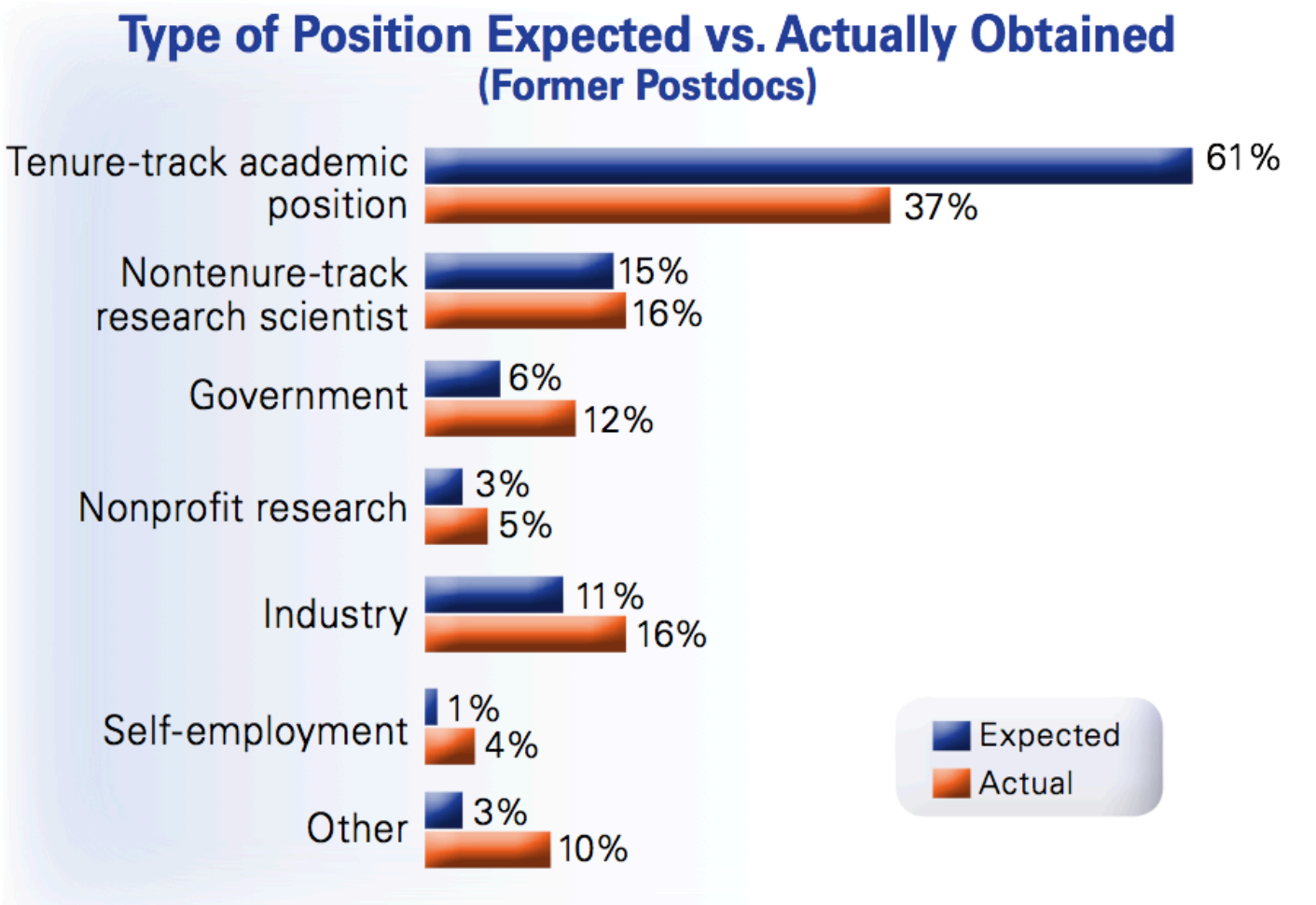
Availability of Jobs



Source: AAAS Career Magazine, Aug 2010

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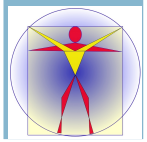
Distribution of USA Science Jobs by Market (+/- 5%)*

- 15% Academia
- 30% Government
- 20% Non-Governmental Organizations
- 35% Business

In 2006, only 14% of PhDs were in tenure or tenure-track positions 4-6 years after receiving their degree**

* Source: AAAS Science Careers
** Source: CBE- 2011



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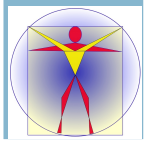
What's Out There?

Kinds of Companies

- Large Pharma
- Biotechs
- Medical Devices and Diagnostics
- Non-profits, NGOs



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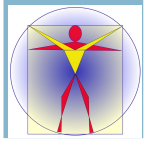
Typical Job Titles

- Senior Scientist/Engineer
- Applications Specialist
- Group Leader
- Project/Program Manager
- Technical Support Specialist
- QA/QC
- Business Development
- Technical Writer
- Business Research Analyst
- Corporate Communications
- Patent Review
- Regulatory Affairs



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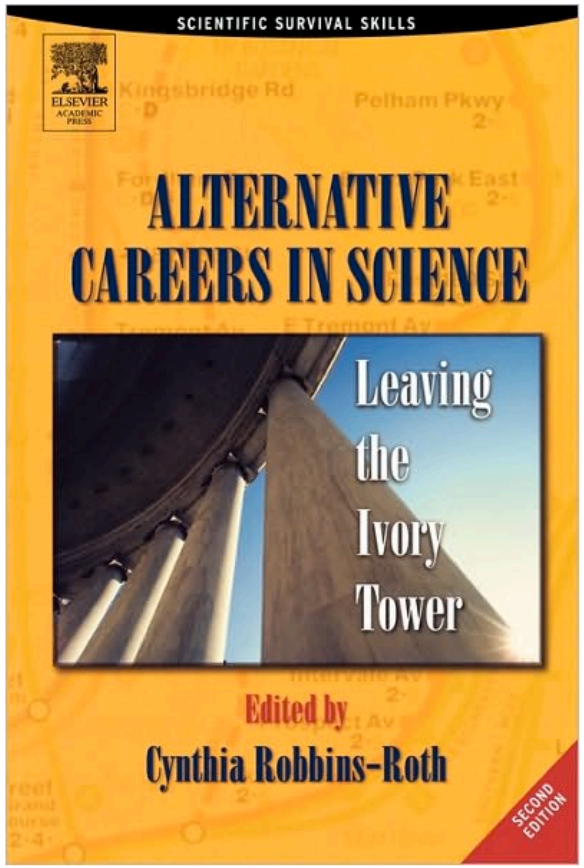
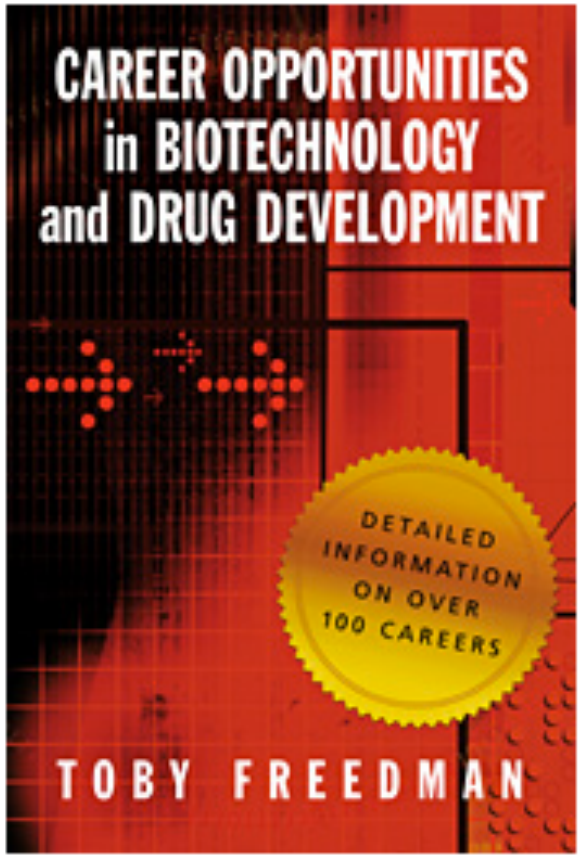
Typical Job Titles





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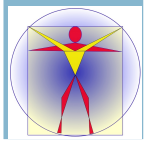
You need a Strategy

Short Term Strategy: 1-5 years

Long Term Strategy: 15 years

The typical “first job” lasts 1-2 years

The typical “second job” lasts 3-5 years



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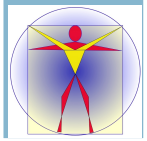
Two Rules of Business (USA)

- By definition, a Business must make a profit. The tax code requires a profit status. Investors require a profit status.

- A business must constantly compete globally and improve its products and services as well as productivity standards: revenue per employee, return on capital deployed, new drug success rate, …

Results in seeking employees with technical as well as business skills.



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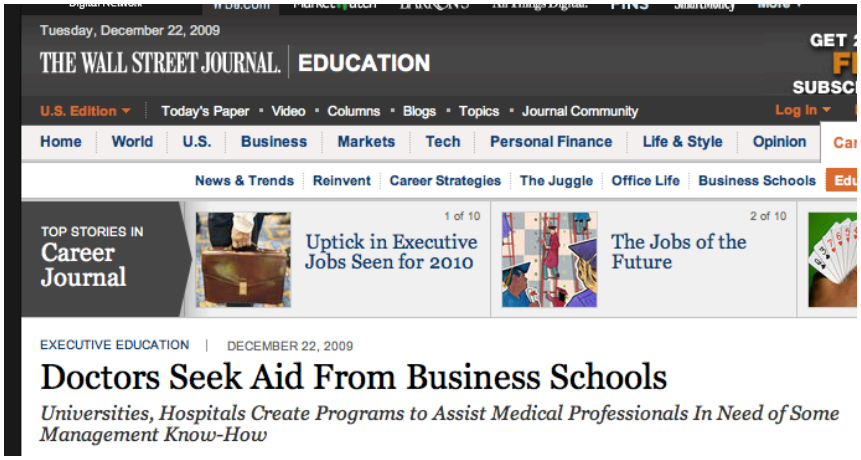
Critical Skills

- Good judgment
- Strong Communications skills
- Ability to work as part of a team



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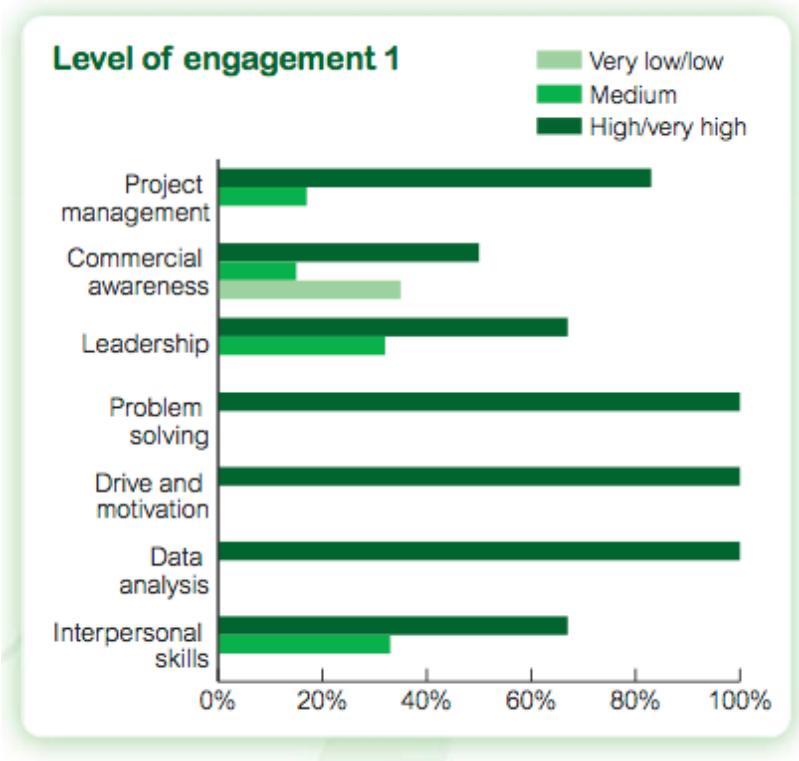
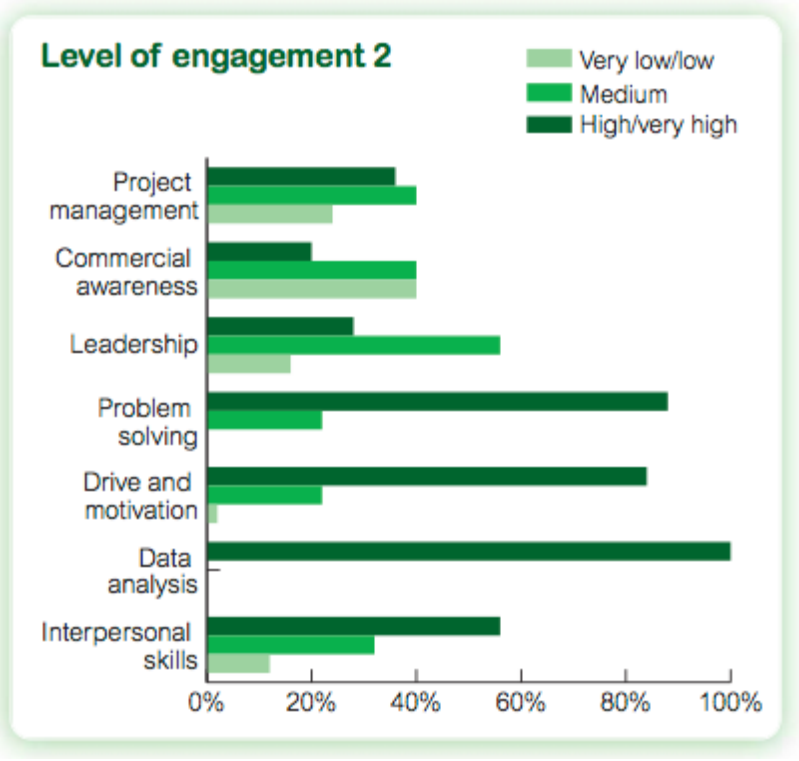
Perceived Value of Doctoral Graduates in Industry



Highly value doctoral graduates (6%)



Strong interest in doctoral graduates (25%)

Source: “Recruiting researchers: survey of employer practice 2009”

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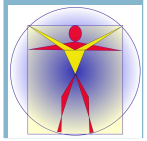
Value Characteristics of Scientist to Employers

Generally positive

- Education/learning
- Computer literacy
- Critical thinking
- Problem solving
- Technical writing
- Research a topic
- Self managed workflow
- Technical expertise
- Technical teams
- Work ethic
- Technical network

Generally need development

- Matrix team experience
- People communications
- Conflict management
- Supervisory skills
- Leadership skills
- Persuasion skills
- Relationship management
- Strategic thinking
- Financial acumen
- Performance acumen



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The Language of Business

Creating the Vision

- Strategic
- Technical/Scientific
- Innovative
- Risk Management
- Champion/Energy

Developing People

- Collaboration
- Enabling
- Empathy
- Rapport

Execution

- Structuring
- Control
- Tactical
- Delegation

Achieving Results

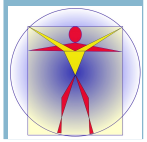
- Production
- Focus
- Competition

Communications/Learning

- Technical Literacy
- Style Flexibility
- Emotional Intelligence
- Social Intelligence

Financial Acumen

- Return on Investment
- Internal Rate of Return
- Determining performance metrics
- Managing the Balance Sheet



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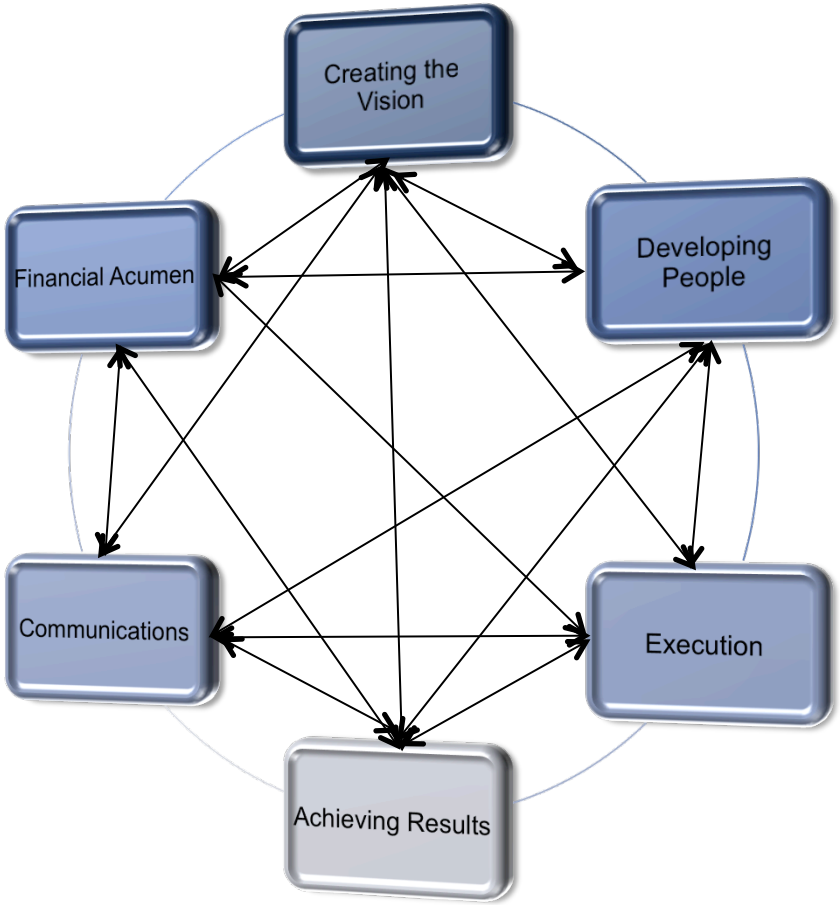
Competencies Interact



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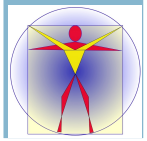
Mapping Scientists Behaviors to Business Skills

PhD Behavior	Relates to
Developing a Hypothesis	Creating the Vision
Training students	Developing People
Planning and performing experiments	Execution
Quality-checking data	Achieving Results
Presenting and defending your work	Communications
Managing costs for an experiment	Financial Acumen



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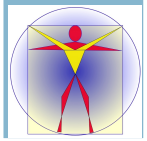
Matching your Talent Map to Business Requirements by Function

Competency	Executive	Mid level Manager	Staff Support	Research	Operations	Sales
Technical/Scientific				++++		
Creating the Vision	+++			+++		
Developing People		+++				
Execution		+++			++++	
Achieving Results		++++		+++	++++	++++
Communications	++++	+++	+++		+++	++++
Financial Acumen	++++	+++	+++	+++	++++	+++



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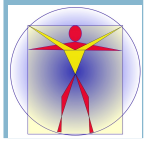
Matching your Talent Map to Business Requirements by Employee Size and Revenue

Competency	<100 employees	<1,000 employees	Global	<$5M per year	<$500M per year	>$500M per year
Technical/Scientific	++++	++++	+++	++++	+++	+++
Creating the Vision	+++			+++		
Developing People	+++			+++		
Execution	+++	+++		+++		
Achieving Results	++++			++++		
Communications	++++	+++		+++	+++	
Financial Acumen	++++			+++		



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Mapping Job Posting to Business Competencies

Job Description

The candidate will lead a group focused on the establishment and development of innovative recombinant antibody engineering technologies. He/she will develop novel technologies in the areas of antibody discovery to support HGS therapeutic protein and antibody programs in autoimmune, oncology and infectious disease areas. In addition, the candidate will manage internal collaborations with other HGS research and development groups on relevant projects as well as external collaborations/contracts with current or future HGS partners.

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Business Competency Matrix

Company: HGS **Position**: Sr. Scientist Antibody Engineering

Competency	Job	Score	Comments
Creating the Vision			
Strategic	X	X	
Technical/Scientific	X	X	
Innovative	X	X	
Risk Management			
Champion/Energy	X		
Developing People			
Collaboration	X		
Enabling	X		
Empathy	X		
Rapport	X		
Execution			
Structuring	X	X	
Control	X	X	
Tactical	X	X	
Delegation	X		
Achieving			
Production	X	X	
Focus	X	X	
Competition		X	
Communications			
Technical Literacy	X	X	
Style Flexibility	X		
Emotional Intelligence			
Social Intelligence			
Financial Acumen			
Return on Investment			
Internal Rate of Return			
Performance Metrics			
Balance Sheet			

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Career Planning

Short and long term planning

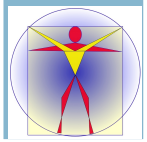
- Self-assessment
- Match skills to opportunities
- Relate experience to competencies
- Identify gaps in long term goal required skills

Continuing education

- In-house training
- Local colleges
- Local consortia

Pursuing Long-term goals

- New responsibilities
- Broadened experience
- Promotions



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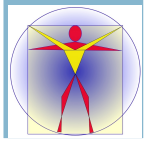
How Do Your Skills Stack Up?

- Learn/understand the 24 competencies
- Rate your skills in each competency
- Map your skills to job description
- Develop experience statements
- Identify strengths/weaknesses
- Develop targeted resume
- Develop talking points



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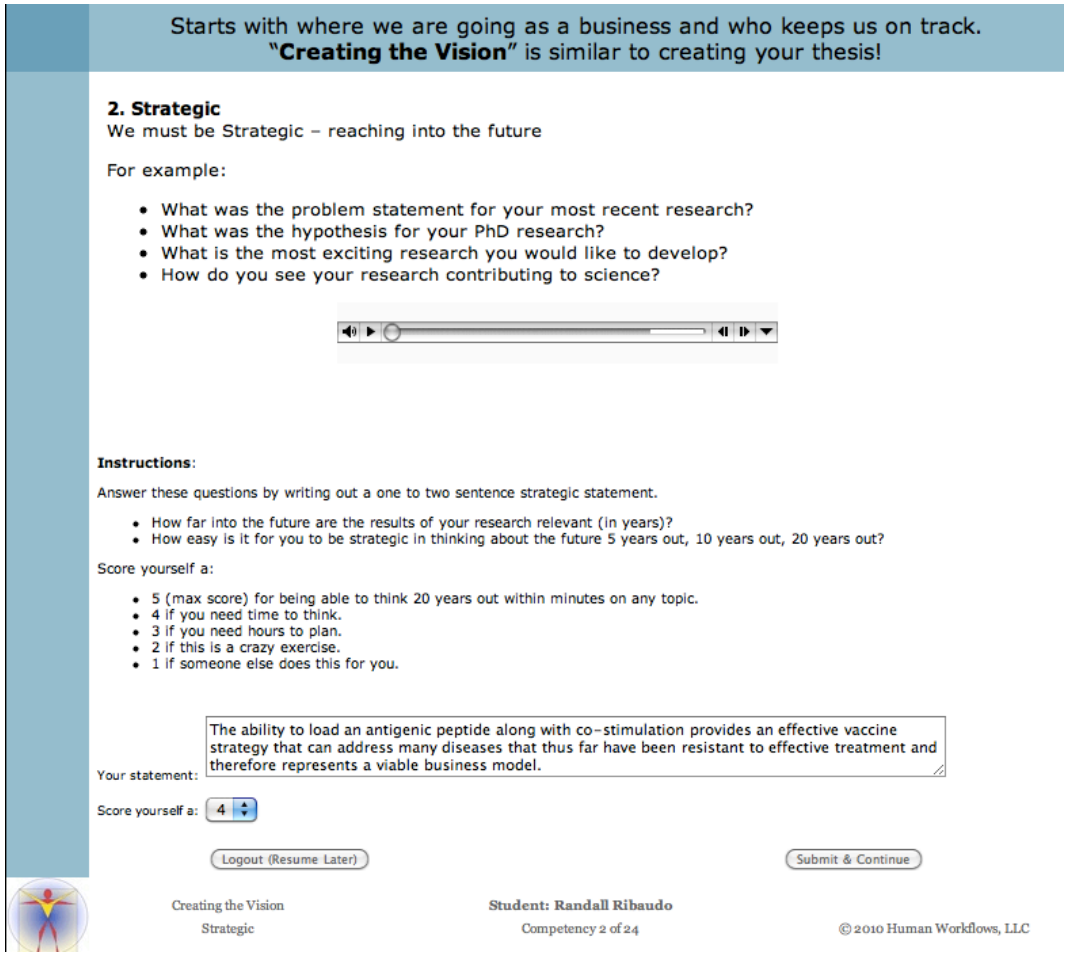
Self Assessment
the 24 competencies



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Self-Assessment Detailed Report

By Job Type

Competency	Executive	Mid level Manager	Staff Support	Research	Operations	Sales
Technical/Scientific	**	**	**	**	**	**
Creating the Vision						
Developing People						
Execution	*	*	*	*	*	*
Achieving Results	*	*	*	*	*	*
Communications						
Financial Acumen						

Your Score: (* = 4 to 5) (** = 5) - critical to position - highly desirable but not critical

By Company Type

Competency	<100 employees	<1000 employees	Global	<$5M per year	<$500M per year	>$500M Per year
Technical/Scientific	**	**	**	**	**	**
Creating the Vision						
Developing People						
Execution	*	*	*	*	*	*
Achieving Results	*	*	*	*	*	*
Communications						
Financial Acumen						

Your Score: (* = 4 to 5) (** = 5) - critical to position - highly desirable but not critical

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Self-Assessment Detailed Report

By Company Life Cycle

Competency	Startup	Turnaround	Innovator	Market Leader	Mature	Market Follower
Technical/Scientific	**	**	**	**	**	**
Creating the Vision						
Developing People						
Execution	*	*	*	*	*	*
Achieving Results	*	*	*	*	*	*
Communications						
Financial Acumen						

Your Score: (* = 4 to 5) (** = 5) - critical to position - highly desirable but not critical

By Degree of Independence

Competency	Entepreneur	Innovator	Private Company	Public Company
Technical/Scientific	**	**	**	**
Creating the Vision				
Developing People				
Execution	*	*	*	*
Achieving Results	*	*	*	*
Communications				
Financial Acumen				

Your Score: (* = 4 to 5) (** = 5) - critical to position - highly desirable but not critical

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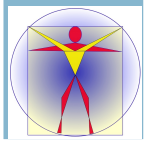
Identifying, Extracting and Translating Critical business Competency Information from Job Ads



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Business Competency Hierarchy

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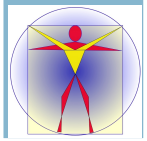
Representative Executive Competencies:

- Responsible for **creating an organizational culture of innovative scientific leadership** which generates “first to market” products that sustain.

- Responsible for constantly improving the **operational agility** of our manufacturing of Bio Pharma so as to be recognized as the global benchmark for return on equity deployed in biotech manufacturing.



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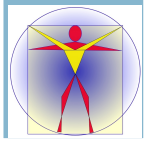
Deriving Operational Competencies

Let take the first Executive Competency ***"creating an organizational culture of innovative scientific leadership"*** and derive the Operational Competencies:

- **Organizational Performance**
- **Leadership Assessment**
- **World benchmark for Scientific Knowledge in product field**
- **Leading decision teams for innovation**
- **Entrepreneurial Spirit**



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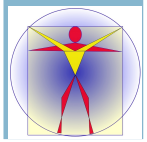
Deriving Individual Core Competencies

Lets take the operational Competency ***"leading decision teams for innovation"*** and derive the Individual Core Competencies:

- **Risk Management**
- **Champion**
- **Enabling**
- **Rapport**
- **Control**
- **Focus**
- **Emotional Intelligence**
- **Performance Metrics**



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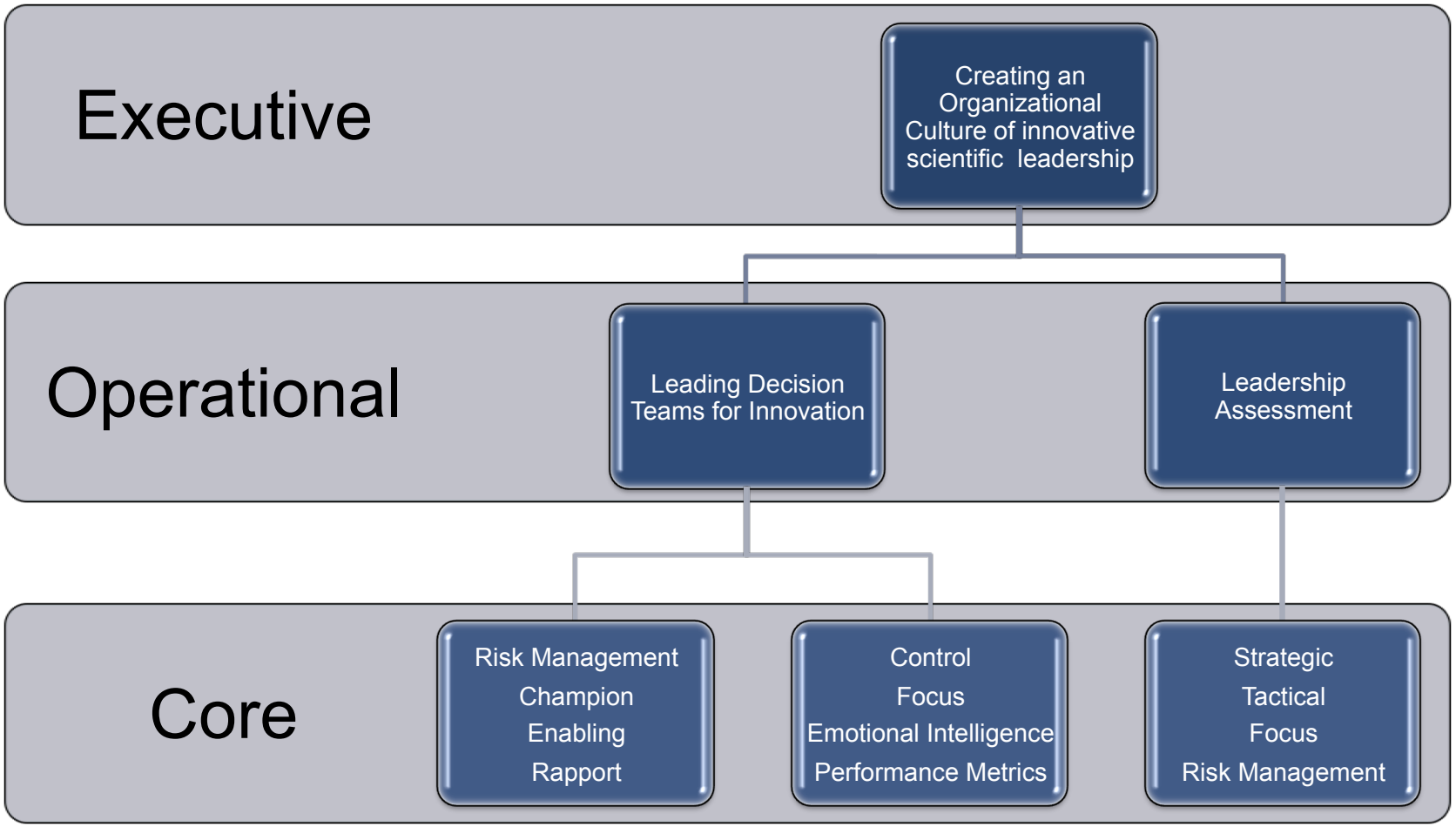
Human Workflows Competency Framework



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Job Description: Research Scientist II: Drug Metabolism

Description

Vertex Pharmaceuticals, Inc. is seeking a highly motivated scientist for our DIPK (Drug Innovation and Pharmacokinetics) group in San Diego, CA. The successful candidate will be skilled in the preparation, isolation and characterization of drug metabolites generated using enzymatic systems such as bacterial cytochrome P450s among others. The scientist will be working closely with other members of the DIPK group and medicinal chemists in the selection of compounds to study as well as metabolites for scale-up to advance all discovery projects in San Diego and other Vertex sites as required.

Requirements

- Ph.D. with 4+ years of experience, or a MS/BS with 7+ years of experience in analytical chemistry and drug metabolism with a minimum of 3 years experience gained in the pharmaceutical industry.
- Extensive knowledge of metabolite identification using LC/MS/MS and NMR is required as well as metabolite preparation and purification procedures.
- A strong desire to contribute in a collaborative fashion with an ability to present his/her point of view and influence the project through scientific debate
- A strong knowledge of biotransformation and experience in drug discovery are preferred.

Vertex creates new possibilities in medicine. Our team discovers, develops and commercializes innovative therapies so people with serious diseases can lead better lives. Vertex scientists and our collaborators are working on new medicines to cure or significantly advance the treatment of hepatitis C, cystic fibrosis, epilepsy and other life-threatening diseases. Founded more than 20 years ago in Cambridge, MA, we now have ongoing worldwide research programs and sites in the U.S., U.K. and Canada. Vertex has continually been recognized as one of the industry's top workplaces by leading publications such as Science Magazine, The Boston Globe, Boston Business Journal, San Diego Business Journal and The Scientist. For more information and to view Vertex's press releases, please visit http://www.vrtx.com

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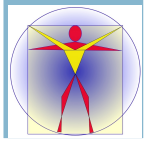
Mapping Operational Competencies

	A	B	C	D	E	F	G	H
1	Creating the Vision				Developing People			
2	**Strategic**	**Innovative**	**Risk Management**	**Champion Energy**	**Collaboration**	**Enabling**	**Empathy**	**Rapport**
3				highly motivated scientist				
4					working closely with other members	working closely with other members		working closely with other members
5					a strong desire to contribute in a collaborative fashion			a strong desire to contribute in a collaborative fashion
6					advance all discovery projects			
7								
8								
9	creates new possibilities in medicine	creates new possibilities in medicine		creates new possibilities in medicine				
10					Our team			
11	discovers, develops	discovers, develops						
12	innovative	innovative		innovative				
13				people with serious diseases can lead better lives			people with serious diseases can lead better lives	
14					and our collaborators			
15								



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Mapping Job Posting to Business Competencies

Description

Vertex Pharmaceuticals, Inc. is seeking a highly motivated scientist for our DIPK (Drug Innovation and Pharmacokinetics) group in San Diego, CA. The successful candidate will be skilled in the preparation, isolation and characterization of drug metabolites generated using enzymatic systems such as bacterial cytochrome P450s among others. The scientist will be working closely with other members of the DIPK group and medicinal chemists in the selection of compounds to study as well as metabolites for scale-up to advance all discovery projects in San Diego and other Vertex sites as required.

Requirements

- Ph.D. with 4+ years of experience, or a MS/BS with 7+ years of experience in analytical chemistry and drug metabolism with a minimum of 3 years experience gained in the pharmaceutical industry.
- Extensive knowledge of metabolite identification using LC/MS/MS and NMR is required as well as metabolite preparation and purification procedures.
- A strong desire to contribute in a collaborative fashion with an ability to present his/her point of view and influence the project through scientific debate
- A strong knowledge of biotransformation and experience in drug discovery are preferred.

Vertex creates new possibilities in medicine. Our team discovers, develops and commercializes innovative therapies so people with serious diseases can lead better lives. Vertex scientists and our collaborators are working on new medicines to cure or significantly advance the treatment of hepatitis C, cystic fibrosis, epilepsy and other life-threatening diseases. Founded more than 20 years ago in Cambridge, MA, we now have ongoing worldwide research programs and sites in the U.S., U.K. and Canada. Vertex has continually been recognized as one of the industry's top workplaces by leading publications such as Science Magazine, The Boston Globe, Boston Business Journal, San Diego Business Journal and The Scientist. For more information and to view Vertex's press releases, please visit http://www.vrtx.com

Business Competency Matrix

Company: Vertex **Position**: Research Scientist II: Drug Metabolism

Competency	Job	Score	Comments
Creating the Vision			
Strategic	XX	4	
Technical/Scientific		5	
Innovative	XX	5	
Risk Management		5	
Champion/Energy	XXXX	4	
Developing People			
Collaboration	XXXXX	5	
Enabling	X	4	
Empathy	X	4	
Rapport	XX	5	
Execution			
Structuring	XX	4	
Control	XX	4	
Tactical	XX	4	
Delegation		3	
Achieving			
Production	XXX	4	
Focus	XXX	5	
Competition	X	4	
Communications			
Technical Literacy	XXX	3	
Style Flexibility	XX	4	
Emotional Intelligence	XXX	4	
Social Intelligence	XXX	3	
Financial Acumen			
Return on Investment	X	3	
Internal Rate of Return	X	2	
Performance Metrics	X	3	
Balance Sheet	X	2	

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Experience Statements

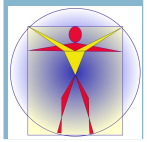
Developing People

Collaboration: I believe that every successful project is based on efficient collaborative efforts of a team . I was and am having different levels of collaborations through my research and my life, so I would appreciate that every collaboration adds great value to the success with believing that a great leader is who are always thinking of others and making them successful in the team work.

Enabling: As I have said, enabling other team workers to be successful is the key to a collaborative team work. With understandings of team workers career goal and their interests, I consistently appreciate team workers for their contribution, sometimes leave the work for them to do at their competency even I can do it better, through which I think will strengthen their confidence and joyful feeling in a team work.

Empathy: I think understanding problems and situations of my team workers by sitting in their role, and never involving my personal and emotional judgment to others in the team work is very important to a collaboration project. I have learned this from my former postdoc advisor, and is trying to apply this skill in my work, such as I occasionally leave chances to lab technician or other researchers in our team, even I am thinking I could do it better and also show my competencies.

Rapport: I believe that having a thanksgiving and forgivable heart is the key to build rapport around me, not matter it is research or life. Also I won't involve my personal emotion to judge people. In addition, I never promise anything that I could not do, but if I promise to my coworkers or friend, I will try best to keep it even I have to take much effort. In very few occasions, if I could not do what I promised, I would personally say sorry to them.



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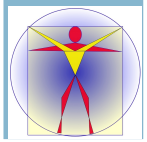
Experience Statements

Achieving Results

Production:	I strive to produce the best work within my means and meet deadlines and commitments.
Focus:	Determination and focus enable me to work long hours to complete projects within the deadlines even though there are many other fun things to do on nights and weekends.
Competition:	Competition spurs me to go the extra mile and put additional effort into projects with high visibility.

Communications

Technical Literacy:	I can articulate my research and its purpose with little effort.
Style Flexibility:	I can articulate the purpose and details of my research to a variety of audiences and for a variety of purposes.
Emotional Intelligence:	I can respond appropriately and calmly to conflict without becoming defensive.
Social Intelligence:	I can explain the purpose and details of my research as both a scientist and a person concerned with the prevention of cancer given the history of my family.



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Original Resume

Jane Doe, PhD
1234 North Ave W
St Paul, MN 55104
(651) 555-1234 (mobile)
Email: jdoe@umn.edu

Professional Experience

The Scripps Research Institute, Florida; Full time (Oct., 2007 to present)
2007 Senior Research Associate

Research focuses on cytochrome P450 kinetics, P450 inhibition, metabolite profiling and formation of reactive intermediates of NCEs.

Projects:

- Set up the high throughput quantitative and qualitative methods to screen the potential reactive intermediates of NCEs in vitro;
- Examine structure-bioactivation relationships and liability of compounds including assessment and characterization of bioactivation pathways of drugs and new chemical entities (NCEs) and evaluation of the underlying mechanisms leading to CYP enzyme inhibition and drug-drug interactions;
- Discover the first highly selective inhibitor and specific probe for CYP3A4 and CYP3A5 based on a joint medicinal chemistry effort and compound library screening;

University of California at Los Angeles, CA; Full time (Feb., 2005 to Sep. 2007)
2005 Postdoctoral fellow

Established proteomics core lab and developed the Nano-RP-HPLC -based MS approaches to identify protein and protein posttranslational modifications, such as phosphorylation; Provides the LC-ESI-MS/MS analysis support for all the on-going projects.

Projects:

- Identify the proteasome subunits and its posttranslational modification;
- Identify the purified murine heart mitochondrial proteins;
- Analyze the 20S proteasome phosphorylation sites;
- Developed and optimized the protein multi-proteases digestion and Nano-RP-HPLC-MS/MS method for protein identification;

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Targeted Resume

Jane Doe, PhD.

SUMMARY OF QUALIFICATIONS

Innovative and highly motivated drug discovery team leader experienced in drug metabolite characterization using advanced protein LC/MS/MS and related technologies. Experienced in building dedicated research teams through collaboration and enabling others resulting in successful drug metabolism based discovery to aid early detection of liability of drugs or drug candidates. Significant experience in the study of CYP mediated drug metabolism and the development of chemical substrates to more accurately predict metabolism of new compounds by CYP variants and better evaluation of the potential for drug induced toxicities, drug-drug interactions with co-medications, herbal supplements, and environmental xenobiotics. Specialized skills include development and optimization of drug metabolism related assays, lead-optimizations that meet targeted molecular profile, and pre-clinical development. Within this research activity, the focus on continuing development of oneself and others is nurtured. An extensive author of peer reviewed publications and sought after journal reviewer.

EDUCATION

Institute of Materia Medica, Chinese Academy of Medical Sciences 2002
and Peking Union Medical College, Beijing, China
Ph.D. In Drug metabolism and Pharmaceutical Analysis

Shenyang Pharmaceutical University, Shenyang, China 1999
M.S. in Medicinal Chemistry

HEBEI Medical University, Shijiazhuang, China 1993
B.Sc. in Pharmaceutical Science

Professional Experience

The Scripps Research Institute, Florida 2007 to present
Senior Research Associate:
Research focuses on cytochrome P450 kinetics, P450 inhibition, metabolite profiling and formation of reactive intermediates of NCEs. Projects include:

- Set up the high throughput quantitative and qualitative methods to screen the potential reactive intermediates of NCEs in vitro;
- Examine structure-bioactivation relationships and liability of compounds including assessment and characterization of bioactivation pathways of drugs and new chemical entities (NCEs) and evaluation of the underlying mechanisms leading to CYP enzyme inhibition and drug-drug interactions;
- Discover the first highly selective inhibitor and specific probe for CYP3A4 and CYP3A5 based on a joint medicinal chemistry effort and compound library screening;

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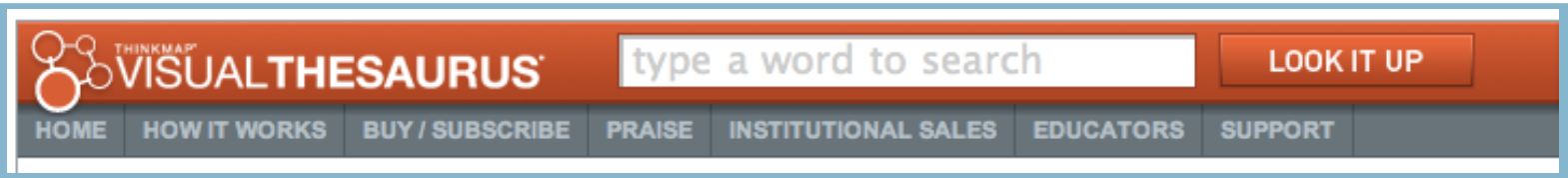

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Enter text to look up: start over

Found 152 words

Show Relevance: 5 4 3 2 1

Show Subjects:
- Show All Words (152)
- Geography (6)
- People (0)
- Social Studies (3)
- Arts & Literature (1)
- Math (2)
- Science (27)
- Vocabulary (43)

Sort by: Relevance | A-Z | Occurrences | Familiarity

Create Word List

pharmacokinetics metabolite cytochrome enzymatic vertex NMR commercialize cystic fibrosis hepatitis C fibrosis cystic motivate life-threatening collaborative pharmaceutical metabolism hepatitis collaborator press release scientist as required San Diego bacterial characterization workplace epilepsy analytical Ph.D. medicinal motivated purification innovative U.K. drug ongoing requirement therapy generate chemist identification isolation worldwide chemistry preparation significantly threaten innovation skilled procedure minimum contribute medicine compound experience require discovery journal Cambridge site threatening globe disease work on project Boston point of view using advance develop selection publication extensive cure preferred candidate recognize prefer continually industry required debate scale release create possibility magazine working discover scientific seeking lead ability research Canada recognized group treatment closely program gain knowledge highly successful view year seek fashion member strong as well leading science press serious years team information business influence study please use visit desire system top other ago new work up to U.S. point present life more than well such find better more found

Definition

Nouns:
- the accumulation of knowledge or skill that results from direct participation in events or activities
- the content of direct observation or participation in an event
- an event as apprehended

Verbs:
- go or live through
- have firsthand knowledge of states, situations, emotions, or sensations
- go through (mental or physical states or experiences)
- undergo an emotional sensation or be in a particular state of mind
- undergo

Examples from Text (4)

Requirements - Ph.D. with 4+ years of **experience**, or a MS/BS with 7+ years of experience in analytical chemistry and drug metabolism with a minimum of 3 years experience gained in the pharmaceutical industry.

- A strong desire to contribute in a collaborative fashion with an ability to present his/her point of view and influence the project through scientific debate - A strong knowledge of biotransformation and **experience** in drug discovery are preferred.

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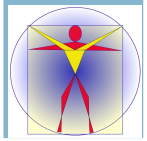
Value of the Process

- Customized Resume
- Talking points for Interviews
- Emphasize your strengths
- Mitigates weaknesses (risk management!)
- Differentiates you from your competition



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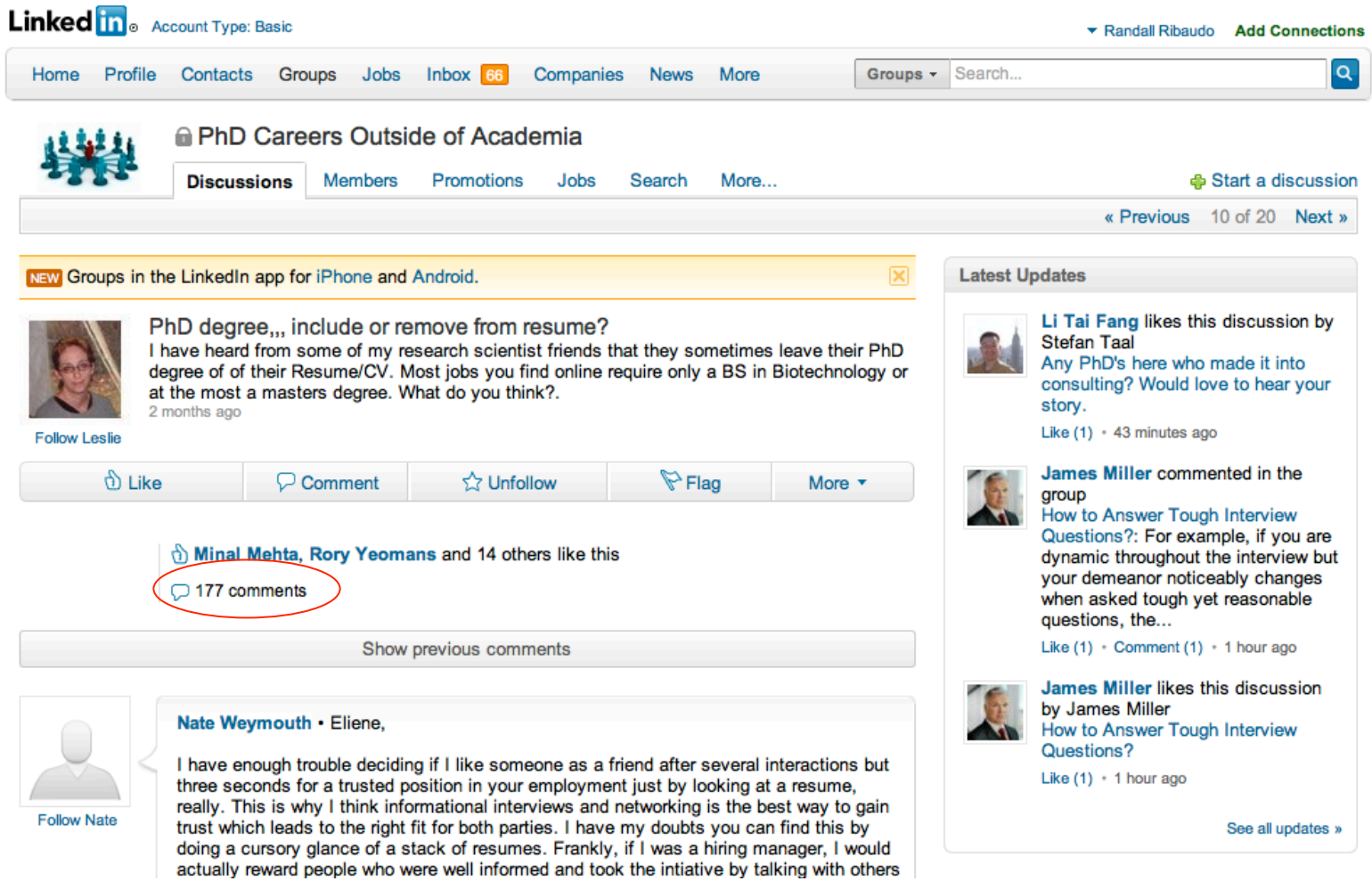
Include or Remove PhD from your Resume?



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Testimonial

Hi Randall,

I applied your resume/cover letter strategies presented last week in the NCET2 webinar and am looking forward to a phone interview next week. You gave me the courage to change the focus of my letter and bring in more extracurricular experiences

Thank you,

Brian

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Mapping of Business Competencies to PhD Behavior

Competency	PhD Behavior
Creating the Vision	
Technical/Scientific	Design, analyze and iterate your science
Strategic	Formulate a problem statement
Innovative	Research the problem Extend knowledge to new findings
Risk Management	Cost/Benefit of a PhD
Champion/Energy	Manuscript/Grant Rejected
Developing People	
Collaboration	Coordinate tasks with team members Use others' input in decisions
Enabling	Build consensus within team
Empathy	Accommodate needs of team members Show active concern for team
Rapport	Manage advisors Show loyalty to team Form close and supportive relationships with team members
Execution	
Structuring	Design an experiment
Control	Self manage a workflow Show progress and milestones
Tactical	Identify process limitations
Delegation	Delegate task to team
Achieving Results	
Production	Systematic approach Meet deadlines, self-monitor Successful completion of experiments and studies Successful completion of thesis Successful completion of manuscripts/grants
Focus	Stay on task Keep experiments and project relevant to research goals Achieve PhD
Competition	Maintaining research relevance in your field Awareness of what colleagues are publishing and how your work is unique and valuable
Communications/Learning	
Technical Literacy	Learn new content
Style Flexibility	Sell your hypothesis
Emotional Intelligence	Accept feedback
Social Intelligence	Consult with superiors
Financial Acumen	
Return on Investment	Accepted publications, and positive reception of your research work in the academic community Positive site-visit reviews
Internal Rate of Return	Justification of total resources in your laboratory (personnel, equipment, budget dollars) by your productivity
Performance Metrics	Relating your return on investment and internal rate of return to the productivity of your program in an understandable way
Balance Sheet	Understanding your laboratory budget and designing projects and experiments that can be performed with your available resources

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SciPhD Business Core Competencies

Creating the Vision:

Where is the company going? How does my work fit into that vision?

Technical Scientific: Be prepared to discuss your technical expertise as well as the new areas your work has led you into. You must be able to do this at three levels of scientific literacy:

1. the 30 second “elevator speech” that gets across the major aspects of your expertise- for folks who don't really care, but need to know

2. five sentences that gives a bit more information and context but not too much

3. five paragraphs or so that describes to peers the work you do- with sufficient detail to really explain your scientific expertise

Strategic Thinking: Reaching into the future- the relevance of your work moving forward: Good example is your problem statement or hypothesis for your research. What is the impact of your research into the future. Why is it important?

Innovative: How were you creative in developing your research? Did you develop new approaches to address an important problem? Or did you come up with a problem during your research for which you had to devise a “work-around”? The goal is to demonstrate your ability to come up with creative innovative solutions to issues that come up with your everyday work, and that you are aware that these things happen. You can also use non-science examples of your everyday life in demonstrating your innovative abilities.

Risk management: Understanding the context and ramifications of looking into the future, not just the technical aspects. Think through financial, technical, people, infrastructure requirements. Weighing all aspects of a project-- cost vs impact professionally, socially, etc. Weighing the relative value of publishing vs getting more work done.

Champion/Energy: The ability to make the vision a reality. Self motivation and self discipline to keep a project going when there are obstacles. Ability to motivate others on the team to continue forward. Ability to inspire faith, trust and get committed resources in your project by superiors. You are competing for resources in the business environment and your ability to sell your idea effects your success. Think of persuasive arguments you have made to obtain necessary resources to perform your research. Think of ways you have inspired and motivated others on your research team to work harder, longer, more diligently.

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Developing People

Leading a team of workers with their own skill sets, personalities and issues in a way that promotes a functional team environment. This is a critical skill in becoming a team leader and working in cross-matrixed environments. This also draws heavily on Communications skills as well as Champion/Energy capabilities.

Collaboration: The ability to get everyone working towards a common goal. It's about building a team. Making individuals work important to others on the team. Sharing in success. How do you bring your team together and get them to focus on what you want to accomplish? How do you handle conflict for the benefit of the team? For example, how did collaboration add value to your research? How did you encourage collaboration even with challenging personalities? How did you sustain cohesion within your research team?

Enabling: Allowing others to develop and perform- even tasks that you could perform as well or better, in order to develop them as contributors for the betterment of the team. From a business point of view it's not enough for you to be good, but to demonstrate your ability to develop others to reach their potential by enabling them.

Empathy: Appreciation of the circumstances of your team members, not just your own. Your ability to accommodate others needs while still focusing on getting the job done. This also comes into play when managing emotional conflicts between team members. Can you demonstrate your ability to understand their circumstance in finding resolution while maintaining their dignity and motivation to contribute to the project?

Rapport: The ability to create relationships with others: those on your team, customers, suppliers, anyone with whom you interact. Building a trusted network in your business (research) environment. Developing close relationships, trust, and cooperation. This includes not just peers, but competitors, superiors, and support personnel as well (admin staff for example). 360° of trust from all with whom you interact. It also includes being able to relate to individuals with different personalities.

Execution

The practice of taking actions and turning them into real accomplishments towards fulfilling a predefined goal. This encompasses planning, direction, utilization of feedback, and adaptation in order to get things done.

Structure: How you get stuff done. Desired outcomes, the execution plan. Typically research has this sort of built in and you can score pretty highly. There's a plan, a sequence, steps along the way to measure progress and define boundaries. These utilize the basic skills of project management. Examples of how you overcome challenges to guarantee ability to deliver on a project are relevant. Specific examples of how your structured approach efficiently identified problems and allowed you to draw on other competencies to address those problems and move the project forward are relevant.

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Tactical: Making the daily and immediate adjustments to keep your work on track. Examples you could cite might include circumstances in which new data indicated the need to make an adjustment in the experimental protocol, or new literature impacted some aspect of your work, or even mundane things like weather or illness of a team member altered the execution of the project. How did you make the necessary adjustments while maintaining the original vision and keeping to your timeline?

Control: Having constant grasp of your data, personnel, progress of the project- always knowing where you are, what the execution plan is, and how you are going to successfully complete the project. What were the processes you had in place so that you always were aware of the status of your project? Think of examples of more challenging projects and how you kept things on track, anticipated problems, and mitigated against those to keep the project moving forward.

Delegation: Part of the skill of "enabling". Think of examples when you delegated tasks or whole projects to others despite your ability to do the work (perhaps even better than anyone else) and how that delegation developed rapport and built a highly functional team. An important aspect of delegation is providing an opportunity for others to excel and develop their own careers. This is highly valued in industry. If you have examples of students or interns working with you and your allowing them to be the lead on a project for their benefit, this could be a good example to use in your value statement and in interviews.

Achieving Results

The constant pursuit and desire to improve productivity through fine tuning and leveraging the specific skills of your team.

Production: The generation of high quality work. It follows a good work ethic, and follows protocols for execution and analysis. Willingness to tap into others' expertise even though it may be "better" than yours. Willingness to benchmark your work against the best in the field. Think of examples in which you've rejected work generated by your own team because the quality wasn't high enough. How do you set your standards for quality of work? How did this establishment of high quality positively impact your program?

Focused: It's not enough to demand high quality work. It's about staying focused on the goal and not getting distracted, no matter how exciting an unexpected result or event may be. Getting off on tangents is a great example of not staying focused. Aligning your personal goals with your research goals is very important as well. Think about challenges in your work that could have easily disrupted your ability to stay focused and how you resisted that temptation (if you did).

Competition: How do you use competition to drive your work? Can you demonstrate examples in which based on what your competitors were doing, you found ways to excel to an even greater extent while staying focused on the original vision? How do you keep abreast of competition and use that productively to your advantage? Competition refers to both internal and external sources.

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Communications

The verbal, nonverbal, emotional and social interactions among people that promote the other five competency areas.

Technical Literacy: This is the ability to adjust the way you talk about your work depending on the audience you are addressing. This primarily focuses on four major areas:

1) the 20 second essence of your work that you can explain to get the main point across (also known as the “elevator speech”.
2) the slightly more detailed explanation of your work extending out to about a minute for folks in indirect support who need a little more information because they are involved in some way
3) the even more detailed information for those in direct support of your project
4) explanation to your peers

In all these cases you are focusing on the technical aspects of what you do, but reducing or expanding on the level of detail based on your audience. For example, the lab chief, or a donor to your laboratory's budget may not need or even understand detailed technical explanations but would appreciate the 20 second or one minute “50,000 foot view”, while your advisor, or your peers in lab meeting or collaborators might need or appreciate far more extensive detail. The ability to boil down the essence of your work into 30 seconds is extremely important in business. The chance encounter with a senior executive in your company who asks what you do is an opportunity lost if you can't efficiently describe your project and value to the company.

Style Flexibility: This is the ability to explain your technical work based on the background and personality styles of the people with whom you are interacting. For example, when explaining the value of your work to non-scientists, can you simplify the explanations to their level of understanding by appropriate use of analogies, drawings or other illustrations to get your major points across?

Emotional Intelligence: You have control over your emotions regardless of the emotional state of the people with whom you are interacting. When your counterpart gets defensive, can you recognize that and turn it into positive energy? Or do you become defensive and argumentative? Specific examples may be interacting with a faculty member who aggressively criticizes your work. Rather than argue with him/her, you might acknowledge their criticism, complement the insight it provides and then use that complement in making your point. This typically requires battling ego, and exercising restraint and humility.

Social Intelligence: This is the ability to recognize the social capital of the audience you are dealing with and frame your message in context of that capital. For example, if you are talking with a group funding cancer research, you might frame your work in terms of its impact on understanding disease in general, and even mechanisms that may cause cancer in particular. If you are talking with people whose main focus is on fiscal responsibility, you might focus your message on how advances in your work will lead to lower costs for treatments, and even that your approach to experimentation takes into consideration the costs of doing the actual work so as to minimize expenses. Effectively moving your focus from global relevance (impact on society) down to personal relevance (a friend, son, daughter

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afflicted with the disease, or financially burdened) based on the social context of your audience is a powerful skill to master.

Financial Acumen

The ability to communicate personal or organizational objectives and behaviors in financial terms.

Return on Investment: This considers all the commitments of dollars, resources, people and time that are put into a project for the purpose of representing an investment by the organization. Expressing the anticipated dollars (or equivalent "value") as a result of successfully implementing the project represents the Return On Investment (ROI). This would include the total cost of supplies, reagents, animals, etc in performing your studies as well as the personnel time (in dollars) for you, any technicians or other personnel.

Internal Rate of Return: This takes the ROI and quantitates it as an interest rate. Expressing the direct and indirect costs of research in dollars to indicate what the net value of the research is to the organization. This would include both direct and indirect costs of your project, and quantitates the total value as an interest rate or percentage, while also considering the impact internally to the company. For example, tactical process refinements that were realized as part of execution of your project may provide efficiencies for other projects in the company, in addition to any direct revenues realized by the results of the successful completion of the project itself.

Performance Metrics: This is the mapping of the entire workflow activities of the project over time to determine the level of effort for each part of the project vs the return obtained. For example, in studying the genetic bases for a particular disease, activities performed over time might include cell transfections, screening, gene cloning, gene expression, protein expression, and animal functional studies. Those activities can be mapped over time along with the experimental results at each step of the process and the costs for each step to see where the biggest "bang for the buck" is. This is commonly done in pharmaceutical companies as they re-evaluate their processes to identify strong and weak components of their drug discovery pipelines. In screening hundreds or thousands of chemical compounds using sequential assays, results of these analyses can reveal a simple re-ordering of different processes in a pipeline that more efficiently eliminates compounds earlier in the pipeline thus significantly reducing costs.

Managing the Balance Sheet: This is a financial expression of who the company (or laboratory) is and where they are going. It is a standardized reporting system commonly used by investors to gain an understanding of the performance of an organization. In your own lab, the balance sheet would list all personnel, their direct and indirect costs, the costs of all supplies, reagents, and support costs from administration etc. Against that would also be listed revenue streams: grants, institutional support (salary support by the institution, physical plant, etc), any revenues from CRADAs, patents, etc.

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Business Competency Matrix

Company: **Position**:

Competency	Job	Score	Comments
Creating the Vision			
Strategic			
Technical/Scientific			
Innovative			
Risk Management			
Champion/Energy			
Developing People			
Collaboration			
Enabling			
Empathy			
Rapport			
Execution			
Structuring			
Control			
Tactical			
Delegation			
Achieving			
Production			
Focus			
Competition			
Communications			
Technical Literacy			
Style Flexibility			
Emotional Intelligence			
Social Intelligence			
Financial Acumen			
Return on Investment			
Internal Rate of Return			
Performance Metrics			
Balance Sheet			

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Thank You

Questions & Feedback

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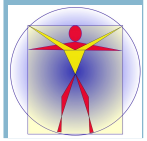

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