Academia, Industry and a Combination of the Two!

Julie E. Tetzlaff, PhD
LUMC
May 18, 2016
1. My Career

2. Postdoc Pathways

3. Entrepreneurism
**Education**

1. UW-Milwaukee (Psychology)
   - Drug discovery

2. Two year research ‘trial’

3. LUMC (Neuroscience)
   - Drug treatments
   - GSC-President
   - Admissions Committee

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**FIG. 1. Chemical structure of RY024.**

Tetzlaff, et. al., 2002

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**Tetzlaff, et. al., 2006**
Postdoc (Research)
Harvard Medical School & Mass General Hospital
• Drug treatments in PD

Postdoc (Admin)
MGPA (Mass General PD Assoc)
– Founding Member
– Elected Co-chair
– Career Development
  • Seminar series
– Communication
  • Alumni database
  • Social events
  • Networking
– PD quality of life & advocacy
  • Pay equity
  • Developed a personal desire to work with PDs

Tetzlaff, et. al., 2008
2nd year of PD-next step?
- Academia/industry?
- Demonstrated desire to study drug treatments
- Get drugs to patients fast
- Ideal location for industry
- Time for **Industry plunge**!
- Started applying to industry jobs!
The Job Search-Tips

• Read LOTS of job ads (every Friday AM)
• Search on-line for interesting company, check career pages weekly
• Soul search
• Make a list of likes and dislikes
• Post CV on-line (no LinkedIn 8 yrs ago!)
• E-mail alerts: Monster w/keywords (‘scientist’, ‘Boston’)
• Request informational interviews
• Saw the **Seaside Therapeutics** ad=PERFECT fit→applied

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Seaside Therapeutics
Interviewing

• Tailor Resume and Cover Letter to each ad

• Interview Prep
  – Read everything possible about the company
    • Websites, publications, press releases, personnel history
  – Prepare data sheet/question list for each individual interview
  – Tip: Be nice to everyone (CSO-elevator story)
  – Tip: Send personalized Thank You notes to everyone
Life at a small startup

- **Amazing, confidence building**
- Grew from 4-45 in 3 yrs!
- Wore many great hats
  - Plumbing, cabinet building
  - Built lab, tissue culture room
  - Helped establish departments
  - Interviewed many people
  - Helped hire
  - Researched biomarkers

View of the Charles River from the lab and Conference Room
Detour
**WI PROS**

- Family/friends
- Parents
- Great place to raise kids
- Better quality of life
- Lower cost of living
- Academia more stable than industry startup
- (Green Bay Packers!)

**WI CONS**

- I *finally* got to industry
- Very few startups in WI
- Career change for me
Asst. Prof. (Research)

Asst. Prof. (Administration)

• Director of MCW Infant Mortality Center
• Director of departmental philanthropic initiatives
• Coordinator of CRI Cores
Asst. Dean of PD Education
- Voice/Advocate for PDs
- Career Guidance
- Career & Professional Development
- Industry-related
  - Consult for drug companies
  - TEC committee member
  - Expanding Industry pipeline in SE WI (BIOForward/PICO)
  - Mentor to Business Startup Challenges (Neuro, Nano)
Office of Postdoc Education

Social Activities
• Postdoc Appreciation Week
• Annual Picnic, Holiday Parties, Zoo

Career Development
• SOS
• Annual Retreat
• IDP Training
• RCR
• R&T

Awards (Annual)
• Travel
  – 20 x $750
• Excellence in Science
  – 1 x $1K
• Outstanding Female Postdoc
  – 1 x $1K

Communications
• Weekly Newsletter

Advocacy
• More vacation days
• Better leave policy

Pathways...
1. My Career

2. Postdoc Pathways

3. Entrepreneurism
Postdoc Paths at MCW

• BWWGR
  – Only ~15% of postdocs will go into academia
  – Industry, Government, teaching (most common)
  – Do PDs have the skills to apply?
  – If you do a PD, notice if these resources are present!
Teaching Path: BW Grant

- Burroughs Wellcome Fund, Career Guidance for Trainees
- **Goal:** Teach PDs how to teach and make them more marketable for careers involving teaching
- **Part 1:** 10-week course on teaching basics
  - Course and syllabus design
  - Blended models of course design
  - Active learning techniques
  - Effective lecture presentations
  - Incorporating tech
  - Rubrics and grading
  - Teaching millennials
- **Part II:** one semester of mentored teaching at a partnering institution
Postdoc Paths at MCW

Advance Class

Academia

PD Paths

Industry

Teaching

BW Teaching Grant

PICO
### Advance: From Postdoc to Faculty

#### Table: % Female by Title

<table>
<thead>
<tr>
<th>Title</th>
<th>Graduate Students</th>
<th>Postdocs</th>
<th>Assistant Professors</th>
<th>Associate Professors</th>
<th>Full Professors</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Female</td>
<td>50</td>
<td>42</td>
<td>30</td>
<td>32</td>
<td>22</td>
</tr>
</tbody>
</table>

1) Lack of role models  
2) Gender bias  
3) Discrimination  
4) Lack of confidence  
5) Children or plans to have children

Nature, 2013
Advance: From Postdoc to Faculty

• 9-month course
• 1 learning session & 1 discussion session/month
• Course Topics:
  – Gender bias, including differences in use of verbal and body language between males and females
  – Confidence, including negotiating and networking
  – Applying for jobs, including the interview process
  – Running a lab (a panel of new and established investigators)
  – Budgets (start-up and for grants)
  – Hiring and managing people
  – Grant writing
  – Life-work balance strategies (creating your own path)
  – Maintaining female uniqueness and strengths while moving up in academic rank
• Request from the Dean to expand
• http://www.mcw.edu/Advance.htm
Postdoc Paths at MCW

- Advance Class
- Academia
- Teaching
- PD Paths
- Industry
- BW Teaching Grant
- PICO
Postdoc Industry Consultants (PICO)

• A *pro bono* consulting group from MCW serving biotech and pharmaceutical firms in SE WI.
• Postdoc founded (Drs. Phil Clifford & Lëna Watanabe) and postdoc run.
• A unique group of postdocs (& graduate students) with a variety of career aspirations (industry AND academic).
• Postdoc *consults* on a business project, *not* science!
• Mentorship received from companies
The PICO Experience

1. Consulting (5-10h/wk)
   - Market Analysis
   - Price Sensitivity Analysis
   - Cost Benefit Analysis
   - Company Acquisition Targets
   - Grant Writing (SBIR, STTR)
   - Business Plans
   - Product and Market Opportunity Assessment
   - Patent Search
   - Regulatory Affair Strategies
   - Technology Transfer
   - Marketing Strategy

2. Educational workshops (5h/mo)
   - Marketing
   - IP (Intellectual Property)
   - Regulatory Affairs
   - VC (Venture Capital)
   - Licensing
   - Professional Relationship Development

3. Networking (3h/quarter)
   - Biotech Conferences
   - SE Wisconsin Bionet Networking Event
     (PICO-run event)
Why? Soft Skill Acquisition

*Employers top skills according to Forbes
PICO Alumni

Lèna Borbouse
Aortic Product Specialist
W.L. Gore and Associates

Michael Zickus
Analytical Chemist
GreatPoint Energy

Ion Moraru
Patent Scientist
Quarles & Brady LLP

Minde Willardsen

Madelyn Hanson
Research Analyst
Kantar Health

Jason Bader
Applications Scientist
Li-Core Biosciences

Competitive Intelligence
Sedulo Group
PICO Alumni

Brian Hoffmann
Assistant Professor
Medical College of WI

Jered McGivern
Tenure-track Faculty
Lakeland College

Adam Gastonguay
Patent Agent
Nelson Mullins, LLP

Benjamin Stengel
Project Manager
Epic Systems

Sheldon Garrison
Director of Rare Diseases
Promentis Pharmaceuticals

Aaron Kittell
Project Manager
Cambridge Major Laboratories
PICO Alumni

Number of Alumni

<table>
<thead>
<tr>
<th>Position</th>
<th>Academia</th>
<th>Industry</th>
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</thead>
<tbody>
<tr>
<td>Postdoc (Academia)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patent Scientist</td>
<td></td>
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<tr>
<td>Project Manager</td>
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<tr>
<td>Sceintist</td>
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<tr>
<td>Product Specialist</td>
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<tr>
<td>Medical Science Liaison</td>
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<tr>
<td>Clinical Research Coordinator</td>
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<tr>
<td>Faculty</td>
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<tr>
<td>Postdoc (Biotech)</td>
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<tr>
<td>Supply Manager</td>
<td></td>
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<tr>
<td>Research Analyst</td>
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<tr>
<td>Market Research Analyst</td>
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<tr>
<td>Laboratory Manager II, Teacher, Career Facilitator</td>
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<tr>
<td>Director of Pediatric &amp; Rare Diseases</td>
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<tr>
<td>Consultant</td>
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<tr>
<td>Analytical Chemist</td>
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</table>
Other ‘PICOs’

Biotechnology & Life Science Advising Washington University (St. Louis) Graduate Students

Coming Soon!
PICO at UW-Madison

mILEAD Consulting
Life Sciences Engineering Advising & Development Univ Mich Postdocs
1. My Career

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MCW: Office of Technology Development (OTD)

- **Mission:** Facilitate the transfer of technology generated from research & clinical practices into *commercial products*
- **Support & educate:** MCW faculty, postdoctoral fellow, clinical fellows, interns, students & staff
- **Engage inventors and internal/external stakeholders to bring** *Patents to Patients®*

Joe Hill, PhD  
Managing Director

Kalpa Vithalani, PhD  
Licensing Manager

James Antczak, PhD  
Licensing Manager

William Clark, MD  
Dir of Research Communication

Edward Diehl, PhD  
Marketing Manager
MCW’s OTD

Commercialization Process

Disclose Evaluate Patent Market License Monitor

MCW

237 Pending or Issued Patents

62 Technologies licensed to companies

Source: MCW OTD Website
MCW’s OTD TEC Evaluation Process

Level 1
Inventors
OTD
• What is the Product?
• Commercialization Strategy
• Proof of Concept
• Patent Needed/Bars to Patenting?

Level 2
Technology Evaluation Committee
• Addressable Market
• IP Landscape
• Science
• Additional R&D
• Faculty Resources/Commitment

Level 3
MCW Leadership
• Budget
• ROI

Go
Hold
Revert

Source: MCW OTD Website
MCW startup companies: Tai Diagnostics

- Ariosa (bought by Roche, $625M)-fetal genetic test
- New: Developing a blood test to determine whether a heart transplant recipient is in danger of rejecting a transplant
- Would replace invasive biopsies
- They have raised $8.2M
- Dr. Aoy Mitchell, PhD (BBC)
- Dr. Michael Mitchell, MD (Surgery)
MCW startup companies: Protein Foundry

• Supply the biomedical research community with chemokines and recombinant proteins
• Founded in 2013 by MCW faculty and staff:
  – Dr. Michael Dwinell, PhD, Genetics
  – Chad Koplinski
  – Dr. Francis Peterson, PhD, Biochem
  – Dr. Brain Volkman, PhD, Biochem
• Microbrew too!
MCW startup companies: Somna Therapeutics

• Medical device company focused on improving the quality of life for those suffering with acid reflux disease
• Non-invasive, safe and simple Reza-Band
• Received FDA clearance in March 2015
• Raised $3.4 million from angel investors
• CTSI: Dr. Reza Shaker
Do you have an idea?

Advice

• Call the OTD with any questions
• The OTD will never discourage publication of data or interfere with career development but will work with you to protect potential IP.
• Even a small change to a buffer that decreases an incubation time by a few seconds could be very valuable to industry.
• You do not have to start your own company to reap the rewards of your IP.
• The OTD licenses a significant amount of IP to existing companies.

Common Mistakes

• Poor recordkeeping
  – Keep notebook well organized with dates
• Giving away IP rights
  – Consult OTD before public disclosure or collaborative work
• NOT reporting to the OTD
  – Invention disclosure form ASAP
• Public disclosure
  – Abstracts, papers (print/on-line), public presentations compromise the invention
  – If publically disclosed, you have 1 year to file for US rights (only)
  – Foreign rights are lost

Source: MCW OTD Website, CTSI website on-line training videos
Have an Idea? Contact ORS.

Teaching Tools

Therapeutic

Software

Medical Device

Loyola

Office of Research Services

http://www.luc.edu/ors/tech_transfer.shtml
National Entrepreneurial Challenges: Neuro-and Nano Startup Challenges

- Develop startup based on NIH owned IP
- 8-10 inventions based on “Neuroscience” (2015) or “Nanotechnology” (2016)
- (1) Develop Pitch, (2) Executive Summary, (3) Launch
- Learning workshops, guidance, mentorship, business plan templates
- Prize:
  - $2500
  - Continued mentorship
  - Access to angel/venture capital funding
Invention: Tumor diagnostic marker for new blood vessels formation which can be used for early detection of brain tumors.

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>MCW Postdoc</th>
<th>PICO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stephanie Cossette</td>
<td>President/CEO</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Adam Gastonguay</td>
<td>Dir of Legal Affairs</td>
<td>Former</td>
<td>Yes</td>
</tr>
<tr>
<td>Aaron Kittell</td>
<td>VP/CSO</td>
<td>Former</td>
<td>Yes</td>
</tr>
<tr>
<td>Michael Harrison</td>
<td>Dir of Marketing &amp; Medical Liaison</td>
<td>Former</td>
<td>Yes</td>
</tr>
<tr>
<td>Alicia Castonguay</td>
<td>Dir Clinical Affairs</td>
<td>Former</td>
<td>No</td>
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<tr>
<td>INVENTION #1</td>
<td>1/10</td>
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<td>--------------</td>
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<tr>
<td>A novel lipid-based nanoparticle that carries drugs to be released on-demand for cancer treatment</td>
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<tr>
<td>INVENTION #2</td>
<td>0/10</td>
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<tr>
<td>RNA nanoparticles and RNA/DNA chimeric nanoparticles comprising one or more functionalities for multiple disorders including cancer</td>
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<tr>
<td>INVENTION #3</td>
<td>0/10</td>
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<tr>
<td>Nanocubes comprising DNA or RNA core with RNA or DNA hybrid duplex for RNA interference and gene silencing</td>
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<tr>
<td>INVENTION #4</td>
<td>0/10</td>
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<tr>
<td>An apparatus containing microarray binding sensors for gene expression and nucleic acid binding assays</td>
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<tr>
<td>INVENTION #5</td>
<td>1/10</td>
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<tr>
<td>A carbohydrate-encapsulated gold nanoparticle used to inhibit metastasis of cancer cells</td>
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<tr>
<td>INVENTION #6</td>
<td>0/10</td>
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<tr>
<td>A highly Sensitive Diagnostic Immunoassay Featuring DNA-tethered Beads</td>
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<tr>
<td>INVENTION #7</td>
<td>0/10</td>
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<tr>
<td>An Ultra-Sensitive Diagnostic Kit for Prostate Cancer</td>
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<tr>
<td>INVENTION #8</td>
<td>0/10</td>
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<tr>
<td>A Smaller Nanoparticle Assembly that Kills Tumor by Heat</td>
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</tbody>
</table>
General career advice

• Soul Search-now!
• Conduct informational interviews
• Network
• Take time to tailor your application materials
• Prepare for the interview
• Leverage your unique skills to get the job you want!
Thank you!

LUMC & Lauren