The Nationwide BEST Consortium
Broadening Experiences in Scientific Training (BEST) Program

Enhance training opportunities for STEM Ph.D.s & postdoctoral scholars to prepare for careers “outside of conventional academic research”

- NIH focus on careers in biomedical research workforce
- Cornell focus on STEM workforce
Core competencies:

- Communication
- Teaching
- Career Development
- Leadership and Management
- Personal Development
- Responsible Conduct of Research
www.BEST.cornell.edu

Sponsors:
- NIH
- Graduate School
- Colleges
  - Agriculture & Life Sciences
  - Arts & Sciences
  - Engineering
  - Human Ecology
  - Veterinary Medicine
Needs Assessment

- Cornell PhD Alumni Career Outcomes Survey
  - What are our alumni doing?
  - How well did their Cornell graduate education prepare them?
- Graduating Student Exit Survey
  - To what extent were learning outcomes achieved?
  - What will graduating students be doing?
- Doctoral Student Experience Survey
  - What are students seeking and participating in?
- New Student Survey
- “Focus groups” – faculty, students, alumni
## New Student Survey

### All Disciplines

<table>
<thead>
<tr>
<th>Envisioned career with graduate degree</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Time Academic Faculty</td>
<td>48.8%</td>
</tr>
<tr>
<td>Part-Time Academic Faculty</td>
<td>1.2%</td>
</tr>
<tr>
<td>Academic Non-Faculty Research</td>
<td>3.0%</td>
</tr>
<tr>
<td>Academic Administration</td>
<td>0.1%</td>
</tr>
<tr>
<td>Industry/Corporate</td>
<td>18.3%</td>
</tr>
<tr>
<td>Government</td>
<td>3.0%</td>
</tr>
<tr>
<td>Non-Profit</td>
<td>1.0%</td>
</tr>
<tr>
<td>Further Education/Postdoc</td>
<td>8.0%</td>
</tr>
<tr>
<td>Do Not Know</td>
<td>15.4%</td>
</tr>
<tr>
<td>Other</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

### Physical Sciences & Engineering

<table>
<thead>
<tr>
<th>Envisioned career with graduate degree</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Time Academic Faculty</td>
<td>37.2%</td>
</tr>
<tr>
<td>Part-Time Academic Faculty</td>
<td>1.0%</td>
</tr>
<tr>
<td>Academic Non-Faculty Research</td>
<td>2.5%</td>
</tr>
<tr>
<td>Industry/Corporate</td>
<td>30.3%</td>
</tr>
<tr>
<td>Government</td>
<td>2.3%</td>
</tr>
<tr>
<td>Non-Profit</td>
<td>0.2%</td>
</tr>
<tr>
<td>Further Education/Postdoc</td>
<td>0.4%</td>
</tr>
<tr>
<td>Do Not Know</td>
<td>17.2%</td>
</tr>
<tr>
<td>Other</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

### Life Sciences

<table>
<thead>
<tr>
<th>Envisioned career with graduate degree</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Time Academic Faculty</td>
<td>40.3%</td>
</tr>
<tr>
<td>Part-Time Academic Faculty</td>
<td>1.5%</td>
</tr>
<tr>
<td>Academic Non-Faculty Research</td>
<td>5.1%</td>
</tr>
<tr>
<td>Industry/Corporate</td>
<td>14.7%</td>
</tr>
<tr>
<td>Government</td>
<td>5.1%</td>
</tr>
<tr>
<td>Non-Profit</td>
<td>2.2%</td>
</tr>
<tr>
<td>Further Education/Postdoc</td>
<td>13.0%</td>
</tr>
<tr>
<td>Do Not Know</td>
<td>16.5%</td>
</tr>
<tr>
<td>Other</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

### Humanities

<table>
<thead>
<tr>
<th>Envisioned career with graduate degree</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Time Academic Faculty</td>
<td>78.5%</td>
</tr>
<tr>
<td>Industry/Corporate</td>
<td>0.9%</td>
</tr>
<tr>
<td>Government</td>
<td>1.9%</td>
</tr>
<tr>
<td>Non-Profit</td>
<td>0.9%</td>
</tr>
<tr>
<td>Further Education/Postdoc</td>
<td>4.7%</td>
</tr>
<tr>
<td>Do Not Know</td>
<td>9.3%</td>
</tr>
<tr>
<td>Other</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

### Social Sciences

<table>
<thead>
<tr>
<th>Envisioned career with graduate degree</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Time Academic Faculty</td>
<td>70.2%</td>
</tr>
<tr>
<td>Part-Time Academic Faculty</td>
<td>1.8%</td>
</tr>
<tr>
<td>Academic Non-Faculty Research</td>
<td>2.8%</td>
</tr>
<tr>
<td>Academic Administration</td>
<td>0.3%</td>
</tr>
<tr>
<td>Industry/Corporate</td>
<td>5.0%</td>
</tr>
<tr>
<td>Government</td>
<td>2.3%</td>
</tr>
<tr>
<td>Non-Profit</td>
<td>1.4%</td>
</tr>
<tr>
<td>Further Education/Postdoc</td>
<td>1.8%</td>
</tr>
<tr>
<td>Do Not Know</td>
<td>13.3%</td>
</tr>
<tr>
<td>Other</td>
<td>0.9%</td>
</tr>
</tbody>
</table>
## PhD Experience Survey

### All Disciplines

<table>
<thead>
<tr>
<th>Professional Development</th>
<th>Not Received/Did Not Seek</th>
<th>Somewhat/Very Helpful</th>
<th>Not/Not Very Helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic career planning</td>
<td>29.9%</td>
<td>54.1%</td>
<td>16.0%</td>
</tr>
<tr>
<td>Career planning</td>
<td>62.8%</td>
<td>17.3%</td>
<td>19.8%</td>
</tr>
</tbody>
</table>

### Physical Sciences & Engineering

<table>
<thead>
<tr>
<th>Professional Development</th>
<th>Not Received/Did Not Seek</th>
<th>Somewhat/Very Helpful</th>
<th>Not/Not Very Helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic career planning</td>
<td>42.5%</td>
<td>45.2%</td>
<td>12.9%</td>
</tr>
<tr>
<td>Career planning</td>
<td>33.2%</td>
<td>27.9%</td>
<td>12.9%</td>
</tr>
</tbody>
</table>

### Life Sciences

<table>
<thead>
<tr>
<th>Professional Development</th>
<th>Not Received/Did Not Seek</th>
<th>Somewhat/Very Helpful</th>
<th>Not/Not Very Helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic career planning</td>
<td>35.8%</td>
<td>49.5%</td>
<td>14.7%</td>
</tr>
<tr>
<td>Career planning</td>
<td>55.8%</td>
<td>26.5%</td>
<td>17.9%</td>
</tr>
</tbody>
</table>

### Humanities

<table>
<thead>
<tr>
<th>Professional Development</th>
<th>Not Received/Did Not Seek</th>
<th>Somewhat/Very Helpful</th>
<th>Not/Not Very Helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic career planning</td>
<td>32.9%</td>
<td>51.9%</td>
<td>14.5%</td>
</tr>
<tr>
<td>Career planning</td>
<td>74.8%</td>
<td>13.0%</td>
<td>15.4%</td>
</tr>
</tbody>
</table>

### Social Sciences

<table>
<thead>
<tr>
<th>Professional Development</th>
<th>Not Received/Did Not Seek</th>
<th>Somewhat/Very Helpful</th>
<th>Not/Not Very Helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic career planning</td>
<td>29.9%</td>
<td>53.1%</td>
<td>16.0%</td>
</tr>
<tr>
<td>Career planning</td>
<td>62.8%</td>
<td>17.3%</td>
<td>19.8%</td>
</tr>
</tbody>
</table>
PhD Exit Survey

Physical Sciences & Engineering

Life Sciences
Faculty Perspectives

- Alumni outreach for mentorship in career fields beyond academia
- Hands-on workshops to acquire skills (in communication, entrepreneurship, e.g.)
- Travel sponsorship of speakers from beyond academia to interact with students & postdocs
- Scientific seminars by individuals in careers beyond academia
- Industry-Academic Symposia (Biotechnology Symposium, e.g.)
- Career Fairs (Engineering, SciTech Career Connection, virtual)
- Flexible internship opportunities
- Diversity Programs
  - Professional Society meetings (Nat’l Postdoctoral Assoc., FASEB, ACS, APS, etc.)
  - Entrepreneurship events (such as E@C Celebration, Summit, etc.)
  - Student run clubs (such as the Graduate Consulting Club-CGCC, Advancing Science and Policy-ASAP)
  - Local events (such as Rev Startup Works)
  - Trade organization events (such as MedTech, NY BIO, e.g.)
Faculty Priorities for BEST

- Helping trainees learn how to think strategically about their career
- Helping identify skills that need to be improved before beginning a job search
- Giving trainees the opportunity to meet scientists & practitioners in various career tracks
- Increasing awareness of various career tracks for PhDs
- Improving communication skills
- Helping them improve academic/professional skills
- Helping apply and practice the skills learned
Important Skills are Transferable
Cornell BEST participants

By college

By field/dept
Two levels of Cornell participation

1. The ‘Sampler’
   - Learn more about different career possibilities with your PhD degree
   - Acquire knowledge about the skills required in each career pathway
   - Decide how the pros and cons mesh with your own career objectives
• **Individual Development Plan:**
  - ScienceCareers **myIDP encouraged**

• **Existing workshops:**
  - Graduate School, CU-CIRTL, CTE, Office of Postdoctoral Studies

• **Attend events:**
  - IP&Pizza, Entrepreneurship@C, REV, MedTech see [www.BEST.cornell.edu/events](http://www.BEST.cornell.edu/events)

• **Join a club:**
  - ASAP – Advancing Science and Policy
  - CGCC – Cornell Graduate Consulting Club
  - TEC – Technology and Entrepreneurship Club

• **Take courses:**
  - SciPol Bootcamp (BME 4440); Science Communication (COMM 5660);
    BSL Business as a 2nd Language (BME 5950); Leadership Development for Life Scientists (ALS 5100)
Career Panel Discussions

Careers in Industry, Entrepreneurship, and Management

Wednesday, November 19
10:00 - 11:30 AM • 700 Clark Hall

Panel Discussion Featuring

BJ Bormann
CEO & Director, Harbour Antibodies BV,
Previously Senior VP, Boehringer Ingelheim & VP, Pfizer

David Putnam
Professor of BME and
CBE, Cornell

Chris Thomas
CTO, WideTronix

Stephen P. Smith
General Manager
& VP of Business
Development, CVC Tech Valley

Recorded by:

Contact: Susi Varvaynias sv27@cornell.edu
www.BEST.cornell.edu

Careers for PhDs in Governance, Risk and Compliance

Wednesday, February 25
2:00 PM
700 Clark Hall

Panel Discussion Featuring

Tony Eisenhut
President of Rheonix, co-Founder of
KensaGroup

Alexis Broshaker
Biosecurity Officer at Cornell University

Amit Lal
Associate Professor in ECE at Cornell, previously Program Manager at DARPA

Denise Archer
Quality Assurance Manager, Animal Health Diagnostic Center, Cornell University

Contact: Susi Varvaynias sv27@cornell.edu
www.BEST.cornell.edu
Two levels of participation

1. The ‘Sampler’

2. The ‘Lingo’
   - In-depth exposure and practice of the skills
   - Longer term or more intensive hands-on talent development
   - Learn the language of the field
   - Be able to say “I’ve done that”
GET EXPERIENCE and CREDIBILITY

• **Academic credit**
  – e.g., Over 70 courses across Cornell in Entrepreneurship

• **Certificates**
  – Online offerings in Six Sigma, Lean, QA/QC, Biopharmaceutical, Regulatory affairs, Medical devices

• **Experience**
  – Enter a business plan or case competition
  – Apply for a seed grant (CAT, NEXUS, SBIR...)
  – Start a company
  – Be a speaker at an industry conference
  – Help shape NY legislation
  – Flexible hours internship
EXAMPLE INTERNSHIPS:

• 5-10h/wk at Cornell’s Environmental Health and Safety as a biosafety analyst
• 5-10h/wk at the Cornell licensing office
• 2d/wk at a venture capital investment firm as a life sciences venture analyst
• 10 weeks at a startup firm in food science
• 3 months between defense and degree conferral at a consulting firm in Luxembourg
• 4 months at a strategic analysis firm in Washington, D.C. in science policy
• 6 months at a large biopharma company in downstream processing
Start to change the culture

• Build on existing seminar series on campus to include speakers from beyond academia
• Fund half the travel costs
• Encourage trainees to invite, host, and organize an interactive session in addition to a lunch discussing their career trajectory

e.g. Nathan Seppa, ScienceNews reporter
BEST funded a postdoc to attend a Pre-Seed Workshop (PSW) to evaluate the commercial potential of his cleantech idea.

As a result of BEST referrals and networking at the PSW, he assembled a business team to complement his science.

Together they applied for and were awarded a NYSERDA NEXUS grant to examine the feasibility.

They are currently talking to potential customers and developing a prototype.
Science Policy

• Externship in Albany over spring break
• Take a course in science policy
• Prepare and pitch a bill for congressional consideration
• Participate in answering the questions that the Department of Health or the Department of Environmental Conservation receive from elected officials
• Travel to D.C. to visit AAAS and the Hill
• Get placed in a state or federal agency as a Fellow
Science Communication

• A BEST trainee was paired with a science communication professional to learn how to write press releases

• With this mentoring she learned how to conduct interviews; the purpose, structure and mechanics of writing; and editing

• She has now co-authored two Cornell Chronicle articles
Governance, Risk & Compliance

- Externship with the Food and Drug Administration
- Visit biocontainment facilities and learn how they’re run
- Workshops on quality assurance, good lab practices
- Write an SOP, understand certification and compliance
- Coursework in governance, risk and compliance
- Internship in a Quality Control department in a company (food, brewing, chemical, biomedical)
- BESTernship with Cornell’s Environmental Health & Safety
total estimated attendance 1158

- Industry, Entrepreneurship & Management
- Science Communication
- Science Policy
- Governance, Risk and Compliance
- ALL career tracks
Hallmarks of the Cornell BEST Program

• **Remind Faculty and Trainees:** primary objective is successful PhD or postdoctoral training

• **Flexible**
  – No requirements
  – As much time as trainees have to devote
  – Ready when you are
  – Suggest your own ideas for career preparation

• **Experiential**
  – Apply what you learn
  – Customize it to fit your needs
  – Write it on your resume
Lessons Learned

• **Not every faculty** needs to endorse the program
• BEST is **not for everyone**
• **Advisory board** of students and postdocs helps with outreach, marketing, event planning, shaping the program
• **Adapt** program vision and components (e.g., added consulting as a career)
• **Evaluation** will be challenging
  – Windrose evaluation questions differ from existing surveys
  – Windrose evaluation questions will be asked only at end of year two of program
  – BEST is inclusive rather than exclusive
• **Emphasize primary objective:** complete degree!
  – Complement faculty efforts to make training experience better
  – Alleviate faculty pain points
• **Share positive messages**
• **Meet with PIs** when needed, especially if PIs are uncertain about their trainees participating
  – Quarterly check-ins
  – **Discontinue BEST privileges** if inadequate academic progress
• **Collaborate** across units – academic departments, Graduate School, Career Services, Alumni Affairs, Office of Postdoctoral Studies, student organizations, external organizations
  – **Identify gaps**
  – **Coordinate to fill perceived gaps**
  – Use available **online resources**