Broadening Experiences in Scientific Training (BEST)

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Associate Provost & Dean
Graduate School
Wayne State University

BEST@wayne.edu

http: wayne.edu/gradschool/best/
2009 Snapshot of the Doctoral Biomedical Research Workforce

Graduate Education & Training
- 2009 total: 83,000
- Time to Degree: 5.5-7 yrs

Postdoctoral Training
- 2009: 37,000-68,000
- Median length: 4 yrs

128,000 biomedical-trained U.S. PhDs

Post-Training Workforce

- Academic Research or Teaching
  - 23% tenure-track
  - 20% non-T.T.
- Industrial Research
  - 18%
- Science Related; Non-research
  - 18%
- Government Research
  - 6%
- Non-Science Related
  - 13%
- Unemployed
  - 2%

International Students

30% of doctoral students skip post-doctoral training
The NIH Broadening Experiences in Scientific Training (BEST) Program

• Supports innovative approaches to broaden graduate training to reflect a range of career options

• Establishes collaboration with nonacademic partners to ensure that career exploration opportunities come from a broad spectrum of research-based careers

• Encourages the view that various career outcomes (including research are successful)
Career Outcomes: Current and Future

A. Career Outcomes for Traditional Model of Graduate Education

<table>
<thead>
<tr>
<th>PhD</th>
<th>Scientific Research &amp; Training</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Faculty</td>
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<td></td>
<td>Mentorship</td>
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<table>
<thead>
<tr>
<th>Postdoc</th>
<th>Industry/Biotechnology</th>
<th>Other Biomedical Careers</th>
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<tr>
<th>Academia</th>
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<tbody>
<tr>
<td>Tenure-track research faculty</td>
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<tr>
<td>Research, non-tenure track faculty</td>
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<tr>
<td>Tenure-track teaching faculty at primarily undergraduate institution</td>
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</table>

B. Career Outcomes for BEST-Enhanced Model of Graduate Education

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<tr>
<td>IDP</td>
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<tr>
<td>Experiential Learning</td>
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<td>Internships, Externships</td>
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<th>Professional Development</th>
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<td>Team Bldg., Time Mgt.</td>
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<td>Science Policy/Communication</td>
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<tr>
<th>Other Science Careers</th>
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<tbody>
<tr>
<td>Government</td>
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<tr>
<td>Law</td>
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<tr>
<th>Legend:</th>
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<tr>
<td>Direct Career Paths</td>
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<tr>
<td>Indirect Career Paths</td>
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Wayne State University
NIH BEST
Overview of Institutional Change

Greater focus on career planning for graduate students
- Individual Development Plans (IDPs)
- Office of Graduate Career Services

Emphasis on consistent progress towards degree

Collect better data on students and program
- Use data analytics to improve program outcomes
- Enhance recruitment to graduate programs

Track alumni through their career progression (15 yrs)
- Use alumni network for career development activities
WSU BEST Program – Training Model
Structured Approach to Career Development

Phase I

Exploratory Seminars
(panel discussions)
1-2 hours
WSU BEST Program – Training Model
Structured Approach to Career Development

Phase I
- Interactive Workshops (didactic training)
  - 8 hours
- Exploratory Seminars (panel discussions)
  - 1-2 hours
WSU BEST Program – Training Model
Structured Approach to Career Development

Phase I
- Exploratory Seminars
  - (panel discussions)
  - 1-2 hours

Phase II
- Interactive Workshops
  - (didactic training)
  - 8 hours

Phase III
- Career Explorations
  - (experiential learning)
  - 4-8 weeks
1-2 hour panel discussions
Introduction to and overview of specific career areas:

• BUSINESS

• LAW

• GOVERNMENT

• COMMUNICATION

• TEACHING
Seminars panelists include

- BEST faculty facilitators (moderators)
- Alumni who have integrated biomedical training with a nonacademic career
- Faculty whose research is connected with a specific career area
Career area
Government

Jaron Lockett
Program Analyst
Office of Program Planning, Analysis and Evaluation / National Institutes of Health
WSU BEST Program – Phase I
Learning Outcomes (all Seminars)

# reporting high ratings before/after (N=93)

- Know about CAREER OPTIONS in seminar's area
  - Before: 16
  - After: 71

- Know the SKILLS important for a nonacademic biomedical career in seminar's area
  - Before: 19
  - After: 77

- Know of OPPORTUNITIES at WSU to foster a nonacademic biomedical career in seminar's area
  - Before: 6
  - After: 47

- INTEREST in a nonacademic biomedical career in seminar's area
  - Before: 47
  - After: 65
Day-long (8-hour) didactic workshops provide Students with core knowledge to make a valuable contribution to career exploration opportunities in the career areas of:

• BUSINESS

• LAW

• GOVERNMENT

• COMMUNICATION

• TEACHING
Workshop leaders include

- BEST faculty facilitators (moderators)
- Alumni who have integrated biomedical training with a nonacademic career
- Faculty whose research is connected with a specific career area
<table>
<thead>
<tr>
<th>Time / Facilitators</th>
<th>Task</th>
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<tbody>
<tr>
<td>9:00 – 9:30 am</td>
<td>Welcome / Introductions</td>
</tr>
<tr>
<td>Judith &amp; Andrew</td>
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<tr>
<td>9:30 am – 12:30 pm</td>
<td>Patent 101</td>
</tr>
<tr>
<td>Stephanie, Mark &amp; Damian</td>
<td>Part 1: Prior Art searching</td>
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<tr>
<td>12:30 – 1:30 pm</td>
<td>Lunch &amp; panel discussion</td>
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<tr>
<td>Stephanie, Mark, Damian &amp; Lance</td>
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<tr>
<td>1:30 – 3:45 pm</td>
<td>Public Policy</td>
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<tr>
<td>Lance</td>
<td>Part 1: intersections between science and the legislative, judicial, and regulatory processes</td>
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<tr>
<td>3:45 – 4:00 pm</td>
<td>Recap / Closure / Wrap up</td>
</tr>
<tr>
<td>Judith &amp; Andrew</td>
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</tbody>
</table>
WSU BEST Program – Phase II
Interactive Workshops

Career area
Law
WSU BEST Program – Phase II
Interactive Workshops

Career area
Law
**WSU BEST Program – Phase II**

**Learning Outcomes (all Workshops)**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Before</th>
<th>After</th>
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<tr>
<td>Know about CAREER OPTIONS in workshop's area</td>
<td>19</td>
<td>53</td>
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<td>Know the SKILLS important for a nonacademic biomedical career in workshop's area</td>
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<td>12</td>
<td>46</td>
</tr>
<tr>
<td>INTEREST in a nonacademic biomedical career in workshop's area</td>
<td>42</td>
<td>53</td>
</tr>
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# reporting high ratings before/after (N=57)
2015 Partners

- WHO
- USDA
- Cayman Chemicals
- Arbor Assays
- Michigan Science Center
- Detroit Dept. Health & Wellness
- Regulatory Affairs Associates
- *Journal of Clinical Investigation (ASCI)*
- Lawrence Technological University
- Structural Genomics Consortium (Toronto)

Samiah Alqahtani
Doctoral Candidate – Nutrition Food Science
*BEST Career Exploration Partner: USDA*
140 student participants
(74 unique individuals) from 25 programs

- 55 of the 74 unique individuals are in years 1-4 of their doctoral program
- 3rd-year doctoral students are the most common participants

Business and Teaching career areas are the most highly subscribed
GDP – Graduate Professional Development Series (2014-15)

GDP sessions

- IDP Workshop (3x)
- Abstract Writing
- Poster Presentation Basics
- Career Planning (2x)
- CV to Resume (2x)
- Job Search Strategies
- Interviewing Skills
- Visual Communication in Science
- Professional Communication in the Workplace
- Fellowship Writing Boot Camp
Heard of the BEST program prior to the survey.

- Knew about the three phases of opportunity in the BEST program. 28%
- Willing to be an instructor in the PAD seminars. 14%
- Willing to participate in the development of BEST programming. 17%
- Willing to identify internship participants. 20%
- Willing to identify external internship partners. 15%

(N=292)

- **Science Translational Medicine**, “Transforming training to reflect the workforce” (2015)

- **BioMatters**, “The best of the BEST” (2014)

- **Science, Issues and Perspectives**: “Yes, you can attend that career event” (2014)

- **NIH Common Fund, Research Grantee Success Stories**: “Learning the BEST way: Wayne State University’s graduate training for a new global economy” (2014)