Two institutions invited to initiate a discussion on career outcomes of academic graduates, primarily PhD.

- Tufts University
- University of California, San Francisco

We will explore data on career outcomes, what the faculty think they know, and what the students actually want.

Discussion and Q & A with attendees.
UCSF – CAREER OUTCOMES

What career paths do students take?

What career paths do faculty think they take?

What career paths do students want to take?
## LIMITED DATA ON FIRST PLACEMENT

**110 BIOMEDICAL SCIENCES PhD 2000-2009**

<table>
<thead>
<tr>
<th>Position</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postdoc/Research Fellows</td>
<td>53%</td>
</tr>
<tr>
<td>Resident/Intern Fellow</td>
<td>15%</td>
</tr>
<tr>
<td>Research Biotech</td>
<td>13%</td>
</tr>
<tr>
<td>Career lab scientist</td>
<td>4%</td>
</tr>
<tr>
<td>Business ancillary</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
</tr>
</tbody>
</table>


| * | * | * |

**Cohort 2000-2002 had 3/27 in tenure track**

11%
FACULTY “DATA” ON FIRST PLACEMENT

- T32 (training grant) data is variable
- General belief is ~90% go on to postdocs
- Majority of faculty are resistant to non-academic goals
- Thought leaders such as Bruce Alberts are strongly in favor of expanding career choices and their exploration while a student
WHAT CAREERS DO STUDENTS WANT?

Survey of UCSF PhD students in life sciences 2008

62% response rate (n=470)

C.N. Fuhrmann*, D.G. Halme, P. O’Sullivan, B. Lindstaedt

Details: cynthia.fuhrmann@ucsf.edu
If you had to choose now, what *one* career path would you choose?

- **Research**
  - 40% → PI in academia
  - PI in academia (research-intensive)
  - PI in academia (teaching & research)
  - Other research in academia
  - Research in biotech/pharma
  - Bench science in government
  - Academia: teaching-intensive
  - Science education for the public
  - Science education for schools
  - Healthcare
  - Writing
  - Policy
  - Law
  - Business of science
  - Drug approval and production
  - Other (science-related)

- **Non-research**
  - 33%

% of students in 3rd or later year

- 24%
- 21%
- 4%
- 4%
- 2%
- 3%
- 3%
- 2%
- 5%
- 1%
- 12%
- 1%
- 2%
- 0%

*Fuhrmann*, Halme, O’Sullivan, Lindstaedt
BY MIDPOINT IN TRAINING, STUDENTS DEMONSTRATE GREAT DIVERSITY IN CAREER PREFERENCES.

First year students

- 19% Non-research
- 26% Other research (biotech, government, non-PI academia)
- 55% PI in academia

Third and later year students

- 33% Non-research
- 26% Other research (biotech, government, non-PI academia)
- 40% PI in academia

Fuhrmann*, Halme, O’Sullivan, Lindstaedt
SUMMARY OF THE DATA...

- Graduate school decreases confidence in early career choice.
- Career preferences shift during first 3 years of doctoral training (after beginning full-time research).
- By the time of graduation, one-third of students would choose a non-research career path (only 40% would choose a PI-in-academia path).

Fuhrmann*, Halme, O’Sullivan, Lindstaedt
WHAT ARE UCSF’S RESPONSES?

Offer opportunities for the following:

- **Self-awareness** of skills, interests = IDP
- Understand **career options**
- Career planning **opportunities**
- **Networking** – create opportunities to seek mentors beyond academe
- Develop **transferable skills** (writing, communication, leadership skills)
- Internship **experience** in the desired path
GSICE provides opportunities for UCSF graduate students to:

• Develop the **professional skills** necessary for non-academic careers

• Receive dedicated **mentorship** around pursuing and exploring non-traditional science careers

• Gain **hands-on experience** in appropriate career environments to determine where their skills and interests lie. Usually one quarter.

• Contact is Alexandra.Schnoes@UCSF.edu
## GSICE Student Cohort 2009-2010

### Graduate Program Distribution

<table>
<thead>
<tr>
<th>Industry</th>
<th>Law</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Bioengineering;</td>
<td>1 Biophysics</td>
</tr>
<tr>
<td>1 Biomedical Sciences</td>
<td>1 Tetrad*</td>
</tr>
<tr>
<td>1 Pharmaceutical Sciences &amp;</td>
<td></td>
</tr>
<tr>
<td>Pharmacogenomics</td>
<td></td>
</tr>
<tr>
<td>2 Tetrad*</td>
<td></td>
</tr>
<tr>
<td><strong>Business</strong></td>
<td><strong>Science Policy,</strong></td>
</tr>
<tr>
<td>2 Bioengineering</td>
<td><strong>Communication &amp; Education</strong></td>
</tr>
<tr>
<td>2 Tetrad*</td>
<td>4 Tetrad*</td>
</tr>
</tbody>
</table>

*Biochemistry, Cell Biology, Developmental Biology & Genetics*
## GSICE INTERNSHIP SITES

<table>
<thead>
<tr>
<th>Industry</th>
<th>Law</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amyris</td>
<td>Morrison &amp; Foerster</td>
</tr>
<tr>
<td>LS9</td>
<td>Fluidigm*</td>
</tr>
<tr>
<td>Green Pacific Biologicals</td>
<td></td>
</tr>
<tr>
<td>SRI International</td>
<td></td>
</tr>
<tr>
<td>Illumina</td>
<td></td>
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<tr>
<td>Novartis*</td>
<td></td>
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<tr>
<td>Genentech*</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Business</th>
<th>Science Policy, Communication &amp; Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burrill &amp; Co*</td>
<td>BioCentury*</td>
</tr>
<tr>
<td>iHub</td>
<td>KQED*</td>
</tr>
<tr>
<td>Deloitte Recap</td>
<td>UCSF SEP*</td>
</tr>
</tbody>
</table>

*Internship placements

*Internship placements
SECOND RESPONSE

CENTER FOR BIOENTREPRENEURSHIP

- Courses and programs led by industry experts
- Educate students, postdocs, faculty in business skills
- Facilitate academia – industry interactions
BIOENTREPRENEURSHIP COURSES

- Idea to IPO...and Beyond
- Drug Discovery...and Design
- Corporate Finance Survival Skills
- Intellectual Property...Life Sciences
SUCCESS METRICS

- Registrants in courses & programs ~1000 annual
- 62 industry people involved
- High evaluation marks (4.5/5.0)
- Five new companies started
PARTICIPANTS IN “IDEA TO IPO”
2000 - 2009

- Faculty/Staff: 19%
- Students: 36%
- Postdocs: 29%
- Industry: 16%
NEW KNOWLEDGE → NEW DESTINATIONS