Increasing Graduate Programs Diversity: From single program change to institutional transformation

Prepared for:
NIH/NIGMS Training, Workforce Development, and Diversity Program Directors Meeting
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Professor of Medical Science
Dean of the Graduate School
GOALS
Prepare a fully staffed STEM workforce that draws on and benefits from changing demographics to advance human health and national productivity, and is both relevant and globally competitive.

QUESTION: ‘1) Can partnerships enhance student recruitment and success? 2) Can elements of personalized student support address gaps in undergraduate preparation and enhance academic success in Graduate School? and 3) Can increased faculty involvement in interventions and shared goals impact institutional culture and diversity outcomes?’

PROGRAM PRACTICES

1. Enhance & Expand Strategic Partnerships
   Partner with MSIs, and organizations serving UR (HUG/URM) students
   Enables: Early cultivation of relationships with prospective trainees
   Cooperative efforts to understand & support curricular needs and curricular mapping
   Development and understanding of cultural competence

2. Implement a Multi-Faceted, Personalized Educational Program
   Provides: Continuous advising and support structure
   Slate of Skill-based Training Modules
   Strengthened graduate student development & training
   Preparation for careers and career choices in the world beyond Brown
   Community building through: Seminars, Peer mentor networks, Community gatherings,
   Research presentations at local, regional & national meetings

3. Transform Institutional Culture
   Improves diversity and inclusion practices in graduate education
   Engages faculty and staff as stakeholders and beneficiaries of diversity and inclusion investments
Brown IMSD: Sustained diversity practices

Enrolled HUG Ph.D Student Populations: Pathobiology Graduate Program and BioMed vs. National average

URM = HUG (Historically Underrepresented Group)

IMSD vs. Non-IMSD Trainees

URM = HUG (Historically Underrepresented Group)

A. Trainee pools

B. 10-year analysis of Ph.D. progression, 2008 -2018

<table>
<thead>
<tr>
<th>Group</th>
<th>% active or completed PhD</th>
<th>% Leaving with no degree</th>
<th>% leaving with Masters</th>
<th>% Academic attrition*</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSD</td>
<td>96%</td>
<td>0%</td>
<td>3% (2 of 65)</td>
<td>3% (2 of 65)</td>
</tr>
<tr>
<td>Non-IMSD HUG</td>
<td>94%</td>
<td>0%</td>
<td>6% (5 of 88)</td>
<td>6% (5 of 88)</td>
</tr>
<tr>
<td>Non-HUG</td>
<td>88%</td>
<td>5% (21 of 394)</td>
<td>6% (22 of 394)</td>
<td>11% (43 of 394)</td>
</tr>
</tbody>
</table>

* Students did not continue graduate studies

Figure taken from Thompson & Campbell, CBE Life. Sci. Educ. 2016
BioMed URM (HUG) PhD degree Recipients

a. HUGs as a % of all PhD degree Recipients

b. Median Time to Degree
IMSD PhDs: 5.3yrs
Non-IMSD HUG PhDs 5.6 yrs
All BioMed & SPH PhDs: 5.3yrs
National Life Sci PhDs: 6.7yrs

b. Median Time to Degree
IMSD PhDs: 5.3yrs
Non-IMSD HUG PhDs 5.6 yrs
All BioMed & SPH PhDs: 5.3yrs
National Life Sci PhDs: 6.7yrs

c. African American Bioscience PhD output

<table>
<thead>
<tr>
<th>Year</th>
<th>Institution</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Brown</td>
<td>Unranked</td>
</tr>
<tr>
<td>2011</td>
<td>Brown</td>
<td>Unranked</td>
</tr>
<tr>
<td>2012</td>
<td>Brown</td>
<td>Unranked</td>
</tr>
<tr>
<td>2013</td>
<td>Brown</td>
<td>20 of 100</td>
</tr>
<tr>
<td>2014</td>
<td>Brown</td>
<td>11 of 100</td>
</tr>
<tr>
<td>2015</td>
<td>Brown</td>
<td>23 of 100</td>
</tr>
<tr>
<td>2016</td>
<td>Brown</td>
<td>11 of 100</td>
</tr>
</tbody>
</table>

2 Research intensive Non-MSIs.
Source: Diverse Issues in Higher Education
https://diverseeducation.com/top100/

1 Source:
Science and Engineering Indicators 2018

URM/HUG: U.S. Under-represented racial & ethnic trainees (African-American, Hispanic or Latin X, Native American, and Native Hawaiians
Composite SED data shows national average of 12% for 2013-17 (Last accessed 6-10-19)
The Brown BioMed IMSD Program

*Trainee Placement Outcomes (current positions):

**Tenure Track Associate Professor**
Yale University

**Tenure Track Assistant Professors**
Bard College  Rhode Island College  Skidmore College

**Adjunct Assistant Professor**
Northwestern University

**Industry Biomedical Scientists (Senior scientists & Research Directors)**
Bristol Myers Squibb  Biogen Inc. (2)  Genomic Health Healthcare  IBM Inc.
Nirmidas Biotech, Inc.  Adidas Inc.  The L'Oreal Group

**Postdoctoral Fellows**
Harvard University  UCLA  UMass Medical School  UC, Davis  Brown University
University of Colorado  Brandeis University  John Hopkins University
University of Rhode Island  Dana Farber Cancer Institute, Harvard Medical School

**Regulatory Affairs/Legal Specialists**
Oklahoma Med. Foundation  Cooley LLP  Wolf, Greenfield & Sacks P.C.

**Other:**  Federation of American Societies for Experimental Biology

* Trainee identity publicly available via Linked In.  Data as of 5/30/19
The Brown Institutional IMSD Program

Expanded IMSD work coordinates with institutional work

1. Brown University Diversity and Inclusion Action Plan (DIAP)
   a. Invested and committed institutional leadership
   b. Supporting unit (departments, programs, centers & institutes) DIAP development

2. Brown Graduate School Programming
   a. Preview Day (Early engagement and intervention)
   b. Student of Color Orientation & ‘Super Monday’ (Enable early acclimation)
   c. Fellowship Support (Strengthen recruitment & supporting academic excellence)
   d. Co-curricular Programming: Writing Workshops, Career Panels etc.
   e. Partnering with Brown IMSD and PREP programs

3. Brown IMSD Program
   a. Build strategic (internal and external) partnerships
   b. Academic scaffolding (Skills-based modules, Personalized Educational Programming)
   c. Climate change: Transforming STEM departments ‘microclimates’ & ‘microcultures’.
## Climate Survey outcomes

### Satisfaction with Program - IMSD Comparison

To what extent do you agree or disagree with the following statements about your program or department?

<table>
<thead>
<tr>
<th>Statement</th>
<th>STEM IMSD</th>
<th>IMSD Not IMSD</th>
<th>Non-STEM IMSD</th>
<th>Non-STEM Not IMSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>My own relationships and interactions with faculty are positive</td>
<td>86%</td>
<td>91%</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>Students in my program are treated with respect by faculty</td>
<td>87%</td>
<td>81%</td>
<td>81%</td>
<td></td>
</tr>
<tr>
<td>My program is responsive to student concerns</td>
<td>69%</td>
<td>72%</td>
<td>64%</td>
<td></td>
</tr>
<tr>
<td>My program is preparing me for my career goals</td>
<td>66%</td>
<td>66%</td>
<td>61%</td>
<td></td>
</tr>
</tbody>
</table>

### Thinking specifically about your graduate program, please rate the following:

<table>
<thead>
<tr>
<th>Factor</th>
<th>STEM IMSD</th>
<th>IMSD Not IMSD</th>
<th>Non-STEM IMSD</th>
<th>Non-STEM Not IMSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of graduate-level teaching by faculty</td>
<td>71%</td>
<td>83%</td>
<td>68%</td>
<td></td>
</tr>
<tr>
<td>Quality of academic advising and guidance</td>
<td>63%</td>
<td>71%</td>
<td>63%</td>
<td></td>
</tr>
<tr>
<td>Developing me as a scholar</td>
<td>53%</td>
<td>64%</td>
<td>70%</td>
<td></td>
</tr>
<tr>
<td>Developing me as a teacher</td>
<td>59%</td>
<td>50%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>Fair</td>
<td>Good</td>
<td>Very Good</td>
<td>Excellent</td>
</tr>
</tbody>
</table>
HUG/URM Applicants: 2014-2019

*Does not include non-degree applications*
### IMSD-era 6-Year change in institutional HUG admits and matriculants

#### Absolute values of admitted and matriculating PhD students

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apps</td>
<td>437</td>
<td>405</td>
<td>437</td>
<td>553</td>
<td>623</td>
<td>674</td>
</tr>
<tr>
<td>Admit</td>
<td>50</td>
<td>57</td>
<td>70</td>
<td>96</td>
<td>117</td>
<td>112</td>
</tr>
<tr>
<td>matrics</td>
<td>24</td>
<td>24</td>
<td>23</td>
<td>45</td>
<td>55</td>
<td>60</td>
</tr>
</tbody>
</table>

#### Percent change in matriculating PhD students

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of all matrics</td>
<td>8.3%</td>
<td>8.4%</td>
<td>7.5%</td>
<td>14.8%</td>
<td>17%</td>
<td>21%</td>
</tr>
</tbody>
</table>
Institutional Change

Model for change

Diversity Aspirations

Faculty/Departmental buy-in

Administrative Leadership Planning

Student recruitment and retention

IMSD

DIAP

Engaged students

Graduate admissions, retention & success

Institutional Change
Lessons learned and challenges

A. Lessons learned
1. Reward faculty more for investments in diversity
2. Establish and sustain student-centric programs

B. Challenges to manage
1. Institutionalization vs. Siloes
2. Managing the reciprocal relationships between:
   a) Transactional Diversity and Transformational Diversity
   b) Compositional Change and Climate Change