GATEWAYS TO THE LABORATORY PROGRAM:
ENHANCING DIVERSITY OF PHYSICIAN-SCIENTISTS

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ABCRMS St. Louis, Missouri
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PHYSICIAN-SCIENTISTS

- MD or MD-PhD: translational biomedical research
  - Bridge gap between basic science & clinic
  - Apply lab results to people: “bench to bedside”

- Health workforce should be diverse
  - Need diverse students training in these fields

- URM: African American, Hispanic, Native American
  - 16% medical students
  - 9% MD-PhD students
GATEWAYS TO THE LABORATORY

• Undergraduate summer program, started 1993
• Mission: to foster diversity among physician-scientists
• Features:
  – 10 wks, 15 students/yr, mostly freshmen/sophomores
  – Run by Tri-I (Weill Cornell/Rockefeller/SKI) MD-PhD
  – Stipend, “big sib”, lab meetings, journal club, conference, presentation, paper, Research Day
  – Weekly meetings with administrators & scientific directors
PURPOSE

• To determine if Gateways adds a diverse group of individuals to physician-scientist pipeline

• To ascertain career trajectories of Gateways alumni
  – Advanced degrees
  – Health-related fields

• To assess alumni satisfaction with program
METHODS: DATA COLLECTION

- Enhance existing Gateways Alumni database
  - Electronic sources: Google, email, LinkedIn, Facebook, Healthgrades
- Created Gateways Alumni Questionnaire
  - SurveyMonkey.com link sent via email & Facebook
- Info:
  - Demographics: gender, race/ethnicity, disadvantaged status
  - Undergraduate: Institution & major
  - Program: when participated
  - Current status: student, training (intern/resident/fellow), working, faculty
  - Satisfaction: with Gateways
  - Career: advanced degrees, health careers
## RESULTS: GATEWAYS PARTICIPANTS

<table>
<thead>
<tr>
<th>Participants (n=218)</th>
<th># (% of 218)</th>
</tr>
</thead>
<tbody>
<tr>
<td>218 students from &gt;90 colleges:</td>
<td></td>
</tr>
<tr>
<td>1 summer</td>
<td>201 (92)</td>
</tr>
<tr>
<td>2 summers</td>
<td>17 (8)</td>
</tr>
<tr>
<td>Year completed in college:</td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>95 (44)</td>
</tr>
<tr>
<td>Sophomore</td>
<td>115 (53)</td>
</tr>
<tr>
<td>Undergraduate major (known):</td>
<td>214 (98)</td>
</tr>
<tr>
<td>Life Sciences</td>
<td>132 (61)</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>71 (33)</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>11 (5)</td>
</tr>
</tbody>
</table>
DEMOGRAPHIC DATA (n=218)

• Gender: 133 (61%) women, 85 (39%) men

• Race/ethnicity (self-reported, 1 category):
  – African American 126 (58%)
  – Hispanic 66 (30%)
  – Asian/Pacific Islander 19 (9%)
  – Native American 2 (1%)
  – Other 5 (3%)
DISADVANTAGED STUDENTS

• Disadvantaged: 49 (22%) of 218 students
  – Income: 34 (15%)
  – Rural/inner city environment: 11 (5%)
  – Personal/family issues: 4 (2%)
ALUMNI FOLLOW-UP DATA

• Available in 212 (97%) of 218 alumni
  – No follow-up in 6 (3%)
• Of 212, 29 (14%) are still undergraduates
• Follow-up data on 183 college grads
  – \((218-6-29=183)\)
• Advanced degrees: 155/183 (85%)
  – 148/155 (95%) in health
ADVANCED DEGREES

<table>
<thead>
<tr>
<th>Degree</th>
<th>Pursuing (%)</th>
<th>Received (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD</td>
<td>33</td>
<td>62</td>
<td>95 (61)</td>
</tr>
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<td>PhD</td>
<td>10</td>
<td>8</td>
<td>18 (12)</td>
</tr>
<tr>
<td>MD-PhD</td>
<td>19</td>
<td>6</td>
<td>25 (16)</td>
</tr>
<tr>
<td>Other Health</td>
<td>3</td>
<td>7</td>
<td>10 (6)</td>
</tr>
<tr>
<td>Non-Health</td>
<td>1</td>
<td>6</td>
<td>7 (5)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>66 (43)</td>
<td>89 (57)</td>
<td>155 (100)</td>
</tr>
</tbody>
</table>

- Of 19 pursuing MD-PhDs, 10 (more than half) Tri-I
- % URM in Tri-I 29/106 (27%), 3x higher than 9% nationally
- MD-PhD or PhD on the rise:
  - Pursuing 29/66 (44%) vs. received 14/89 (16%), p<0.001
CAREER OUTCOMES

• Of 212 alumni with follow-up:
  – Students 95 (45%)
    • 29 undergrad, 65 health, 1 non-health
  – Training: 37 (17%)
  – Working: Health 59 (28%)
  – Working: Non-health 15 (7%)
  – Faculty: 6 (3%)

• 183 college grads: 161 (88%) health careers
<table>
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<th>Questionnaire Responses</th>
<th># (%)</th>
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<tr>
<td>Responses:</td>
<td>148/212 (70)</td>
</tr>
<tr>
<td>Gateways affected career choice</td>
<td>139/147 (95)</td>
</tr>
<tr>
<td>Solidified plan for science/medicine</td>
<td>124/146 (85)</td>
</tr>
<tr>
<td>Research helped career</td>
<td>136/145 (94)</td>
</tr>
<tr>
<td>Research after Gateways</td>
<td>137/144 (95)</td>
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<td>Presented (regional/national)</td>
<td>128/147 (87)</td>
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<tr>
<td>Author/co-author</td>
<td>97/147 (66)</td>
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<td>Currently doing research</td>
<td>92/146 (63)</td>
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<td>Gateways was valuable</td>
<td>146/147 (99)</td>
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SATISFACTION (N=148)

How satisfied were you with the following aspects of the Gateways to the Laboratory Program?

- Resources: 99%
- Support: 95%
- Big Sib: 84%
- Mentoring: 92%
- Research training: 96%
- Overall experience: 99%
• “Gateways was pivotal for my decision to pursue an MD-PhD.”

• “Prose really can not capture what the Gateways program has meant for my life and career. The amazing relationships I built (in and out of lab!), the great research experience I had and mentorship I received…have been paramount to the way I conduct myself not only as a scientist but an individual… I would relive the '09 summer in a heartbeat, as it truly was the best of my life.”
CONCLUSIONS & FUTURE WORK

• Gateways has an impact!
  – >90% health careers; alumni highly satisfied
  – Diversifies physician-scientist pipeline
    • Of alumni pursuing MD-PhD, ½ are Tri-I

• Long road: after 18 yrs, 2/3 are students/training
  – Appreciate physician-scientists & Gateways
  – Model for other programs

• Alumni directory: resource
ACKNOWLEDGMENTS

• CCNY/MSKCC Partnership for Cancer Research
• Laura Liberman, MD
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• Dr. Karen Hubbard: Principal Investigator CCNY/MSKCC
• Nadia Aslam: Training Director CCNY/MSKCC
• Enhancing Clinical Oncology Research Experience (EnCORE)
• Tri-I MD/PhD Program at Well Cornell/Rockefeller/SKI
• “This research was supported by NIH/NCI U54CA137788/U54CA132378.”
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