CELL-MET’s Diversity and Culture of Inclusion

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Together we have a unified diversity and inclusion plan to meet the needs of technology development and goals of the ERC and the diversifying nation.
Comprehensive Approach to create Diversity & a Culture of Inclusion

CELL-MET Metrics for success: increasing diversity in student, faculty, and staff recruitment, retention, and success to well above national averages
NEW INITIATIVES through CELL-MET

• Alan Alda Science Communications Training
• Interdisciplinary research integrates various disciplines – a common language brings the team together
  – Faculty experts from each university will participate and include postdoctoral researchers – a “Boot-camp” style approach – Nanotechnology, Tissue Engineering, Nano-printing, Imaging, Cardiac Tissue and Heart Disease (film and archive)
  – Postdoctoral researchers and former graduate participants become the trainers

Evaluation helps improvement for future years – Engaging UMich Survey Research Center
  – Climate survey within ENG
  – Continuous engagement for continuous improvement to CELL-MET programs
Broadening participation goals for women and URMs

### Average Female and URM enrollment in Engineering Master’s and PhD programs

<table>
<thead>
<tr>
<th>Institution</th>
<th>URM (Metric 25%)</th>
<th>Female (Metric 30%)</th>
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<tbody>
<tr>
<td>Boston University (BU)</td>
<td>12%</td>
<td>22%</td>
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<tr>
<td>University of Michigan (UMich)</td>
<td>13%</td>
<td>23%</td>
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<tr>
<td>Florida International University (FIU)</td>
<td>30%</td>
<td>25%</td>
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<tr>
<td>CELL-MET Overall</td>
<td>18%</td>
<td>23%</td>
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**CELL-MET Metrics for success:** Increasing master’s and PhD program enrollment to 25% URM and 30% female
Undergraduate Research Programs feed the pipeline of diverse graduate populations

- REU: Photonics & Multiscale Nanomaterials
- REU: Integrated Nanomanufacturing
- REU: Security of Smart Things: From Small Devices to Large Infrastructures

Undergrad Research

Professional Society Meetings

Leverage strong relationships with FIU, University of Puerto Rico Campuses, Norfolk State University (DNIMAS Program Scholars), UTEP

International Internships with Centro Atomico in Argentina

Access to sent announcements to NSF diversity scholar program list-serv

**CELL-MET Metrics for success:** increasing engineering graduate populations from the national level to greater than 25% for URM and greater than 30% for female graduate populations at all three institutions
NEW INITIATIVES through CELL-MET

- FIU senior design projects mentored by BU and UMICH faculty
- Direct FIU student access for potential graduate engagement at UMICH & BU
- Master’s support with transition plan and mentoring to industry or PhD
- Housing supplement for first year graduate students
- Graduate chapters of SWE, SHPE, NSBE, AISES – continuity of professional chapter membership
- International internships and CELL-MET University exchanges
- Replicating FIU’s success of recruiting community college students to 4 year degree to BU and UMICH

CELL-MET is a community within the partner schools
Professional Development and Mentoring leads to diverse workforce

Professional Development
Networking
Innovation Ecosystem Seminars
Research
NSF AGEP
MORE
NSF ADVANCE/STRIDE
NextProf Workshop

- Inclusive Excellence training for all
- Sarah will also work with appropriate counterparts ensuring an aligned recruiting methodology for postdocs. (i.e. posts on National Research Mentor Network, directed emails to Diversity Committee of National Postdoctoral Association, NIH NIGMS-funded IMSD and T32 Program Directors)
- UMich’s NextProf Workshop and BU and UMich’s NSF AGEP awards prepare CELL-MET grad students and postdoctoral researchers for the professorship

CELL-MET Metrics for success: demonstrated retention and increased UR populations (5% increase in total population) in tenure track faculty and industry positions at all three institutions
Boston University announces arrival of Crystal Williams, Associate Provost for Diversity & Inclusion – will work with CELL-MET on best practices for ensuring diverse candidate pool for all hires.

November 2016: FIU is awarded $3.2M NSF ADVANCE Institutional Transformation Grant – developing strategies to increase women and minority professors in STEM and social and behavioral sciences: Kenneth G. Furton, Provost & Executive Vice President at FIU, Suzanna Rose, Associate Provost of the Office to Advance Women, Equity & Diversity at FIU (co-project leader) will work with Yesim Darici, director of the FIU Center for Women’s and Gender Studies.

Prior NSF ADVANCE award, now an institutional program, Strategies and Tactics for Recruiting to Improve Diversity and Excellence (STRIDE), at UMich: grant increased total population of tenure track faculty in STEM departments for UR groups (4% white female, 3% URM)

CELL-MET Metrics for success: demonstrated retention and increased UR groups (5% increase in total population) in tenure track faculty and industry positions at all three institutions
Inclusivity leverages EWD plans as well as current experiential programs

• BU’s RET INM, FIU’s former RET will be leveraged to engage and implement at UMich - model case study implementation to Florida and Michigan

• Young Scholars for high school summer research programs, leverage CPHOM Scholars, RISE, SAS Summer Programs with paid internships

CELL-MET Metrics for success: quantitative measurement of foundational understanding of topics related to nanotechnology, imaging and tissue engineering
CELL-MET opportunities increase local undergrad enrollment

• College scholarships for local high schools, our team members will
  – Work with existing scholarship programs to attempt to secure 2 engineering based scholarships for undergraduates interested in CELL-MET research
  – Host CELL-MET focused and one-on-one meetings at local high schools for seniors and their families discussing these local scholarships

• NEW OPPORTUNITIES with CELL-MET
  – Work with RET participants to identify stellar high school students (rising seniors) – invitations for paid summer research opportunities at local institutions
  – Continued follow-up and engagement with these students
  – Recruit high school seniors to our institutions to continue research with their education
Diverse participants benefit from Innovation Ecosystem Members with insight and experience.

Business owners and professionals from the ecosystem and advisory board provide skills and opportunities:

- Internships and engagement with university career centers
- Engaging diverse researchers within ecosystem to lead professional development seminars and other networking events
- Mentor graduate students interested in industry careers

**CELL-MET Metrics for success**: increased diversity in ecosystem including internships and eventual employment in fields related to CELL-MET research thrusts.
Commitment for diversity and inclusion

• BU, UMich and FIU have a history and institutional commitment to increase diversity in STEM fields

• Partner schools have a solid base of existing programs upon which to build a new set of activities through CELL-MET. Other ERC best practices will also be incorporated

• What we propose to do is novel and important, not just more of the same. We will build upon, not build again.
  – Foundational K-12 curriculum introduced in our urban locations (Detroit, Boston and Miami)
  – Research opportunities for high school and undergraduates focused on key aspects of nanotechnology
  – Increased graduate fellowships, housing fellowships, and internships in CELL-MET areas
  – Creating a CELL-MET Community

CELL-MET Metrics for success: increasing diversity in graduate and faculty recruitment, retention, and success to well above national averages
CELL-MET is committed to producing a more diverse workforce in the areas of nanotechnology, imaging and tissue engineering, and improving our society as a whole.
Questions
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<tr>
<th>Inputs/Outputs</th>
<th>Activities</th>
<th>Outputs</th>
<th>Participation</th>
<th>Outcomes -- Impact</th>
<th>Long</th>
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<tr>
<td>Local &amp; Recruited Enrollment in Undergraduate and Grad Programs</td>
<td>Seminars on university scholarship opportunities</td>
<td>Educating the community about affordable ways to attend a four-year institution. Accessibility for graduate opportunities</td>
<td>- Faculty and staff first generation college students</td>
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<td>Teacher input from EWD engagement on students for mentoring opportunities</td>
<td>Increasing local enrollment at three institutions. Diversifying undergrad and grad populations via active recruiting and engagement in research opportunities.</td>
<td>- High school &amp; undergrads</td>
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<td>Research Experiences</td>
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<td>- Family members</td>
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<td></td>
<td></td>
<td></td>
<td>- Community</td>
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<td>- Admissions depts</td>
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<td></td>
<td></td>
<td></td>
<td>- All members of CELL-MET</td>
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<td></td>
<td>Workshops to be presented at all three institutions</td>
<td>Common language used by all CELL-MET members</td>
<td>- Each institution owns a workshop</td>
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<td></td>
<td>Each institution owns a workshop</td>
<td>Development of a course curriculum at all three institutions</td>
<td>- Workshops developed through NSF AGEP with a focus on bias training</td>
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<td>Common Language - Technical Workshops/Boot Camp (Nanotech, Tissue ENG, Imaging, Nanoprinting, Cardiac tissue and Heart Disease)</td>
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<td>Implementation of required courses for CELL-MET researchers and a potential elective for undergraduates.</td>
<td>- Live stream sessions to allow inclusive participation</td>
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<td>- All members of CELL-MET.</td>
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<td>- Educate all members of CELL-MET bias and methods for communicating and initiating discussions with diverse members of the team.</td>
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<td>Training – Implicit Bias, Gender and Ethnic Bias</td>
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<td>CELL-MET community develops an understanding for bias and through mentoring exercises creates a culture of inclusivity.</td>
<td>- Seminars with Innovation Ecosystem (IE) learning about what life of engineers and scientists in industry is like</td>
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<td>- Diversity in the workplace discussions</td>
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<td>- Mentoring beyond seminars</td>
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<td>- Internships</td>
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<td>- Engaging grad students in minority societies (SWE, SHPE, NSBE, WISE, etc)</td>
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<td>Professional Development</td>
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<td>- Leaders and engineers/scientists from within companies participate</td>
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<td>- Identifying UR employees for discussions of progression from undergrad to workplace</td>
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<td>- IE companies provide opportunities for international and domestic internships</td>
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<td>- CELL-MET students (u/grad &amp; grad)</td>
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<td>- Students gain knowledge on careers outside of academia that their PI’s cannot fully answer. Expanding mentoring network for students and expanding access to future workforce for companies. Initiating and continuing engagement with minority societies gives familiarity and leadership to grad students.</td>
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<td>- Supportive of the new trend of looking at industrial positions as equal not secondary or alternative career opportunities. Identifying the importance of continuing engagement with societies from undergrad -&gt; grad -&gt; professional</td>
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<td>- All CELL-MET participants become better informed on all job opportunities that are available to them after graduating. Not just academic careers. A feeling of inclusivity and not failing to follow in their PI’s footsteps. Acceptance that industrial jobs are as relevant as faculty positions. Consistent participation in societies leads to leadership roles.</td>
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