Institutional Change Via STEMJazz

Christopher Rose
Professor of Engineering
Associate Provost for STEM Initiatives
Brown University

MIT Forum for Equity
Equity in Engineering Education
February 24, 2021
Faculty Are Forever

Self-replication is the norm w/o action

Diversity *sans* cohesion $\rightarrow$ unstable
(isolation, disaffection, flight)

Diversity *sans* achievement $\rightarrow$ unstable
(isolation, disaffection, flight)
WHAT TO DO?
MODEL: A STEM Continuum (from Our MIT youth)

Instigator/Trailblazer

Undergrads  Grad/Postdocs  Faculty
The Dream

Critical Mass

+ Community

+ URM/HUG Creativity

= Breakthroughs!

COMPETITIVE ADVANTAGE
Building The Dream@Brown

Diversity & Inclusion Action Plan
Administration provides resources
Departments provide plans
Administrative oversight and accountability
Administrative Will is ESSENTIAL

President
(Chris Paxson)

Provost
(Rick Locke)
Understanding Race in America is ESSENTIAL

CSREA Director
(Tricia Rose)
A HUG STEM Gadfly/Ombuds-Architect is ESSENTIAL

Associate Provost for STEM Initiatives
(Chris Rose)
Diversity and Inclusion Action Plan

Program Palette Sampler
Provost’s Visiting Professor Program

Jim Gates  Ron Aubert

John Johnson  Carlos Castillo-Chavez
Equity in Engineering Education

Presidential Colloquium Series

Searching For Life Basking in the Warmth of Other Suns

JOHN A. JOHNSON
Professor of Astronomy at the Harvard-Smithsonian Center for Astrophysics

MONDAY, OCTOBER 6, 2014, 5:30 pm
FRIEDMAN AUDITORIUM, METCALF RESEARCH BUILDING
Online registration is now open at: brown.edu/thinking-out-loud

The Caged Drugs Sing: Killing Cancer With Nano

PAULA T. HAMMOND
David H. Koch Professor of Chemical Engineering, M.I.T.

WEDNESDAY, FEBRUARY 11, 2015, 5:30pm
BUILDING FOR ENVIRONMENTAL RESEARCH & TEACHING, ROOM 130
Online registration is now open at: brown.edu/thinking-out-loud

What Guards Our Reality Against Oblivion? SUSY Might

S. JAMES GATES, JR.
Distinguished University Professor, University Regents Professor and John H. Toll Professor of Physics, University of Maryland

WEDNESDAY, MARCH 18, 2015, 5:30 pm
METCALF RESEARCH BUILDING, FRIEDMAN AUDITORIUM
Online registration is now open at: brown.edu/thinking-out-loud

Chemotherapy is the delicate balance of killing the cancer but not the patient. Paula and her team are developing smart nano-engineered "cages" that can elude the immune system to target, breach and kill cancers with a controlled chorus of chemotherapeutic agents. Simply put, Paula makes the caged drugs sing.

Our universe is a place of finely wrought balances which if disrupted even slightly could spell our doom. "Supersymmetry" may be nature's hedge against oblivion. Come hear Jim, National Medal of Science winner, President's Council of Advisors on Science and Technology member, and PBS NOVA regular tell us why in his always delightfully engaging and accessible way.
High Impact ENSEMBLE Brilliance

STEMJazz
Target of Opportunity Program

**Aegis:** All STEM at Brown

**Resources:** $N > 5$ ToO Lines/Year

**Target Identification:** Department/APS1

**Target Evaluation:** Careful Archival Vetting
## Dream Progress: Critical Mass + Community

### Black/LatinX/Native STEM Faculty

<table>
<thead>
<tr>
<th>2014</th>
<th>2021</th>
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<tbody>
<tr>
<td>Wayne (Full+)</td>
<td>Wayne (Full+)</td>
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<td>Andrew (Assoc)</td>
<td>Andrew (Full)</td>
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<td>Jason (Assoc)</td>
<td>Dan (Asst)</td>
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<td>Chad (Assoc)</td>
<td>Phyllis (Full+)</td>
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<td>Johnny (Assoc)</td>
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<td>Kimani (Full)</td>
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<td>Jeff (Research)</td>
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<td>Diana (Assoc)</td>
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<td>Anarina (Research)</td>
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**Dream Progress: Creativity**

**STEMJazz** researchers play their distinct disciplinary instruments in ensemble to weave startlingly new intellectual fabric across seemingly unrelated areas.

Current riffs include:

- **SuperSymmetry and Evolutionary Biology**
- **Genotype, Phenotype and Information Theory**
- **Illuminating Women’s Hidden Contribution to Historical Theoretical Population Genetics**

Press Coverage:

(Wired 1/29/2019)

**Molecular Informatics**
(News from Brown 1/22/18)
Dream Progress: Breakthroughs
The Dream Reprise

Critical Mass + Community + URM/HUG Creativity

⇓

Breakthroughs!

STEMJazz ⇒ Selective Advantage ⇒ Institutional Change