



Broadening Participation in STEM Ph.D. Programs

Rutgers Graduate School-New Brunswick
Supported in Part by NJSGC

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Models that Work

- Diversity-focused consortia, alliances & training grants
- MS/PhD Bridge Program
- Undergraduate summer program, RiSE (Research in Science and Engineering) at Rutgers/UMDNJ



NSF Alliances for Graduate Education and the Professoriate (AGEP)

Objectives: Support alliances of universities dedicated to

- Increase the number of underrepresented minorities (URM) obtaining graduate degrees in STEM disciplines.
- Enhance preparation of URMs for professorial positions

Structure: Consortia of

- Geographically related research universities (“Alliance Institutions”)
- Non-doctoral granting institutions, predominantly minority-serving (“Partner Schools”)

Northeast Alliance for Graduate Education & the Professoriate (NEAGEP)

- Lead institution is University of Massachusetts, Amherst
- In final year of funding (2nd 5 year cycle)

ALLIANCE INSTITUTIONS

University of Mass-Amherst (PI)

University of Connecticut

Boston University


University of Maine

Massachusetts Inst of Technology

University of New Hampshire

Pennsylvania State University

University of Rhode Island

 Rutgers University

University of Vermont

PARTNER INSTITUTIONS

Bennett College, NC

Medgar Evers College, CUNY, NY

Jackson State University, MS

University of Puerto Rico-Mayaguez

Lincoln University, PA

Alliance Initiatives

- Recruitment
 - Annual visits to Partners
 - Recruit each other's URM undergrads for graduate school
 - Coordinate participation at conferences and exhibits
- Professional Development
 - Alliance Science Days – graduate students present work, network with peers and faculty
 - Shared workshops for graduate students
 - Funding for graduate students to attend Institute for Teaching & Mentoring, sponsored by the Compact for Faculty Diversity
- Pathways to Professoriate
 - Exchange postings for postdoctoral and faculty positions
- Data collection and assessment
 - NEAGEP templates and central data warehousing

Other Diversity-Focused Consortia, Alliances and Training Grants at Rutgers

- NSF LSAMP (Garden State LSAMP just completed first year of funding, 9 NJ colleges/universities)
- National Name Exchange
- National Physical Sciences Consortium
- McNair
- NSF I³ (Innovation through Institutional Integration)

What is I³ ?

- I³ = Innovation through Institutional Integration
- Highly visible NSF program, EHR Directorate
- Based at Graduate School – New Brunswick
- Objective: integrate “best practices”
 - horizontally across graduate programs
 - vertically by adapting effective practices to undergraduate research programs
- Best practices include those to broaden participation in graduate study
- 2nd year of 5 years funding
- Pipeline from undergraduate to graduate education
- Successful transition to graduate school
- Preparing graduate students to be future researchers, teachers, and mentors

Retention: Articulated MS/PhD Bridge

- Structure
 - Student admitted to MS program with funding
 - Seamless transition to PhD – typically 2 – 3 years
 - MS component either at a partner school (ex: UPRM) or at Rutgers (“internal bridge”)
- Features to promote success
 - Academic support
 - Flexible curriculum
 - Tutoring
 - Cognitive skills
 - Mentoring
 - Pre-matriculation summer
- Piloted in joint Rutgers/UMDNJ Molecular Biosciences with NIH funding
- NEAGEP allowed extension to physical sci/engineering and behavioral sciences.
- **NJSGC awarded funding for Bridge Program for 2010-11**

Inaugural "Internal" Bridge Fellow



Kenyatta Lucas, Lincoln '01

- PhD, Cell Biology & Neuroscience, '06
- Postdoctoral fellowship at Harvard Medical School

NEAGEP MS/PhD Bridge Fellows

- 2005: Jocie Cherry, Biomedical Engineering, appointed as IGERT Fellow in Year 2



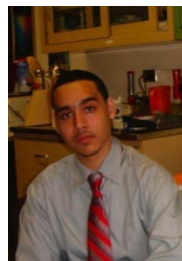
- 2006: Roberto Delgado, Chemistry & Chemical Biology, appointed as IGERT Fellow in Year 2



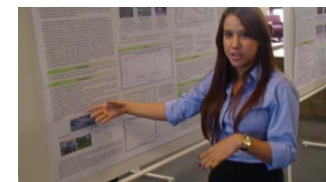
- 2007: David Bord, Geological Sciences, program support Year 2



- 2008: Elio Santos, Psychology, appointed as IGERT Fellow in Year 2



- 2009: Anjuli Ramos, Environmental Sci, RiSE Summer '08 participant, will be TA in Year 2



- 2010: Emmanuel Ekwueme, Biomedical Engineering



NEAGEP MS/PhD Bridge Outcomes

- NEAGEP Bridge Fellows ➡ 100% success in progression to PhD candidacy
- NEAGEP Bridge Fellows ➡ 100% move to training grants or program support in year 2, allowing us to build a larger cohort and expand model to multiple STEM programs
- *"With the support of the Bridge program, my student was able to take additional coursework to bring him up to speed in the graduate program and Perceptual Science IGERT."* Prof. Eileen Kowler, thesis mentor and IGERT PI.
- Institutionalization
 - Bridge as Transition to IGERT (BTIP) proposed in new IGERTs
 - Model adopted by individual graduate programs

Kristia Rivera, UPRM '08, RiSE Summer Program '07 and '08,
Bridge in Chemical & Biochemical Engineering '09-'10



2010 - 11

NJSGC awarded support for an MS/PhD Bridge Fellow

- NJSGC pays stipend (up to \$25,000)
- Academic Dean at Rutgers pays tuition (as institutional match)

Summer Undergraduate Research

RiSE at Rutgers
UMDNJ

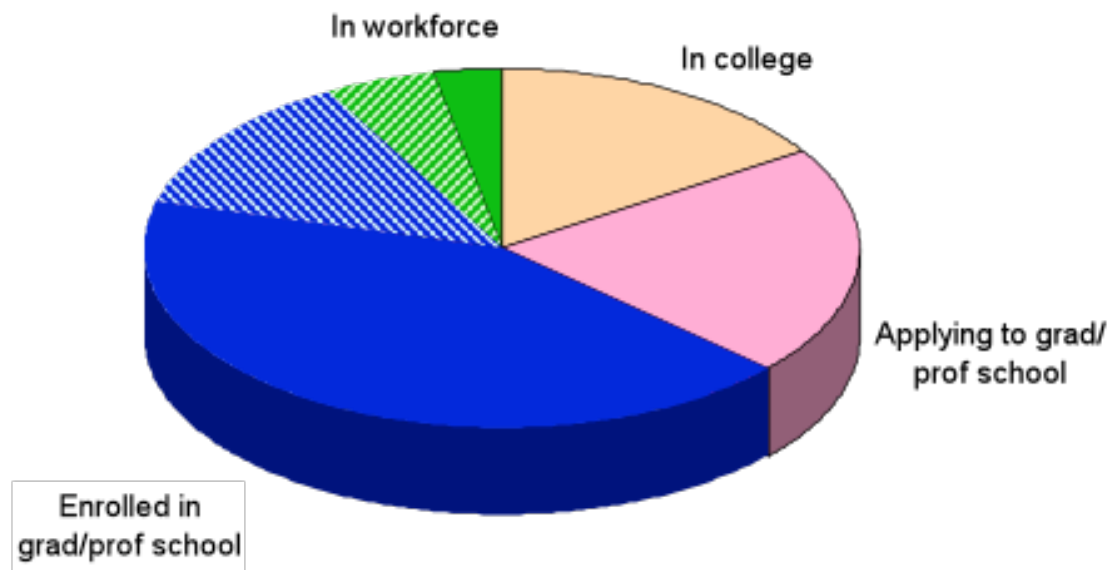
Research in Science and Engineering

<http://rise.rutgers.edu>



- **Highly selective: 25 - 30 scholars per summer, > 350 applicants**
- **Diverse class: URM, disadvantaged, first gen college, student from non-research institutions**
- **Broad spectrum of STEM disciplines**
- **Geographic diversity**
- **Mentored research plus enrichment/professional development**
- **Infrastructure and programmatic components for NSF REUs on campus**
- **Effective vehicle for building partnerships**

5 Year Outcomes for RISE Scholars



Highly successful vehicle for broadening participation in STEM Ph.D. programs, both at Rutgers and in the nation

RISE 2009



NJSGC Scholars in RiSE



Brandon Borde, '08
UMBC
Biomedical Engineering



Renee Clark, '09
CUNY
Chemistry & Math



Maleshia Jones, '10
UMBC
Mechanical Engineering



Monroe Kennedy, '10
UMBC
Mechanical Engineering and
Physics



Christie Rodriguez, '10
Univ. of Puerto Rico-Mayaguez
Industrial Biotechnology

NJSGC Scholars in RiSE

NJSGC has increased its support of RiSE Scholars.

2008: 1 student

2009: 1 student

2010: 3 students

2011: 4 or 5 (depending on other programs statewide)

Building Capacity within New Jersey

Winter Science and Engineering Forum at Rutgers

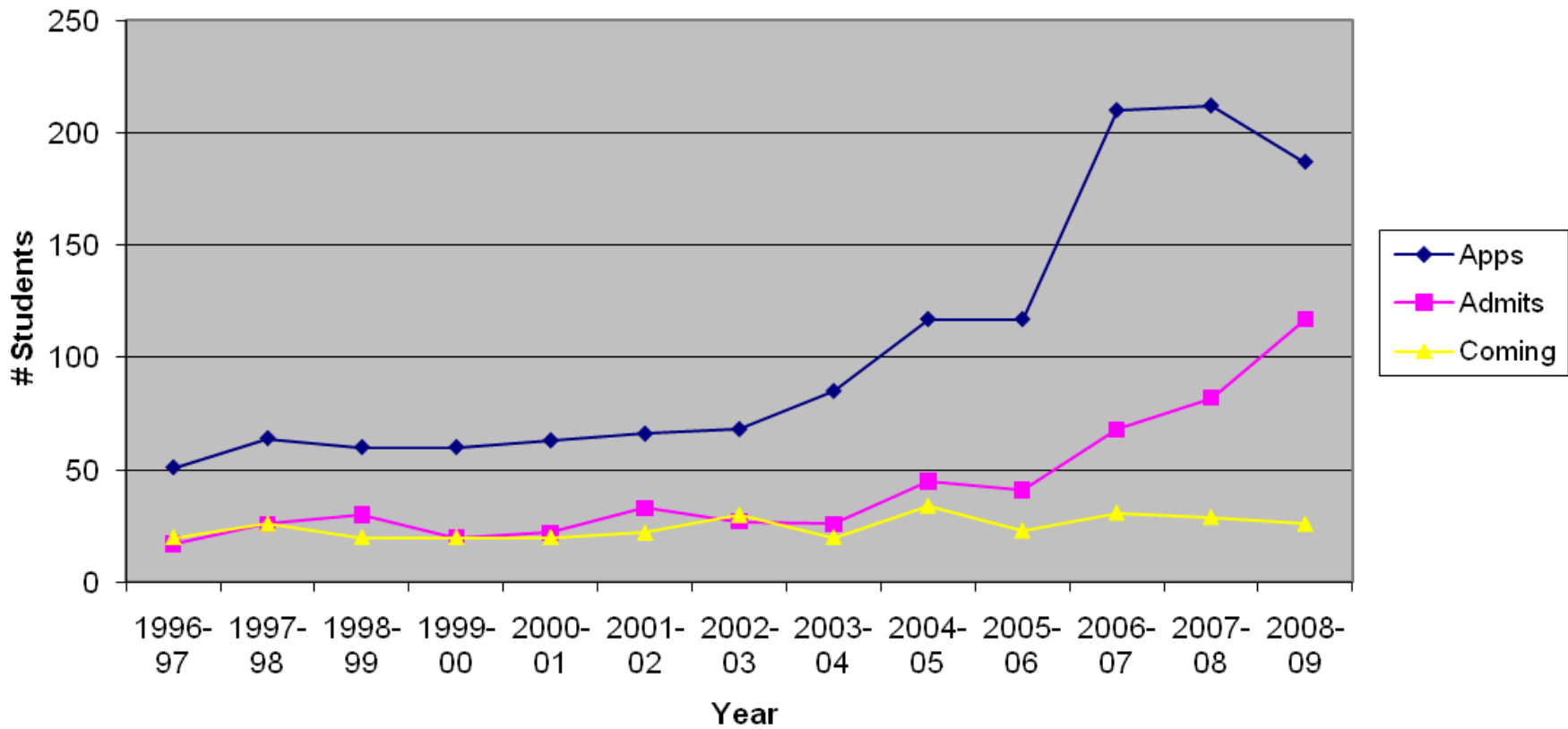
January 2010

- Workshop on graduate school and career options for N.J. and regional STEM undergrads
- Dr. Haim Baruh gave presentation on NJSGC

<http://gsnb.rutgers.edu/science>



Minority Application Trends



Reaching Our Goal !



Thank You