

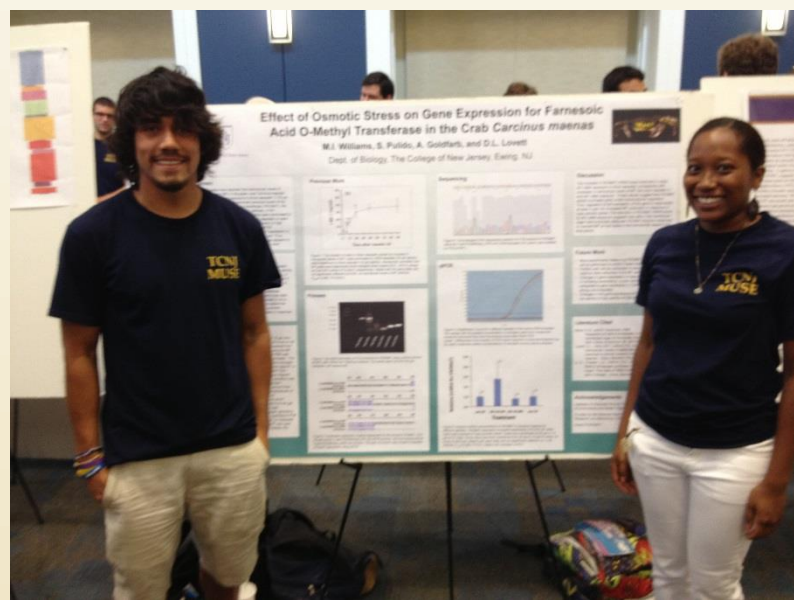


TCNJ BOLD (Broadening Opportunities, Leveraging Diversity): Gateway to Research Careers In Science

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Abstract:
The Gateway to Research Careers in Science program is a merit-based scholarship and research program at The College of New Jersey that supports and motivates students from groups that are historically underrepresented in the sciences, to prepare them for graduate school and research-based careers as scientists. The core of the Gateway program is early and intensive research mentoring by the TCNJ faculty, combined with scholarships and supportive programmatic activities that build community. It starts in the freshman year and continues through graduation, to developmentally build student identity as scientists. The Gateway program started in Biology with an NSF grant; recently the School of Science has adopted a model that extends it and modifies it for all science departments (Biology, Chemistry, Computer Science, Mathematics & Statistics, Physics). A key step was partnering with the Department of Admissions to re-identify funds that already were allocated to merit scholarships for underrepresented students.



	AY 2010-11	AY 2011-12	Summer '12	AY 2012-13	Summer '13	AY 2013-14	Summer '14	AY 2014-15	Summer '15	AY 2015-16
1st bio cohort	mini-rotations (0.25 course/sem.) 10 bio freshmen 1 left program	Join lab; research (0.5 course/sem.) 9 sophomores 1 left program	TCNJ's MUSE: 5 r-juniors REUs: 3 r-juniors	Research (1 course/sem.) 8 juniors 1 natl. conf. poster	TCNJ's MUSE: 4 r-seniors REUs: 3 r-juniors	Research (1 course/sem.) 8 seniors/grads 9 natl. prof. conf. 1 reg. prof. conf.		started PhD : 2 started MD/PhD : 1 research tech : 2 vet experience : 1 traveling : 1 unknown: 1		doing PhD : 2 doing Md/PhD : 1 started PhD : 1 tech, apply PhD : 2 vet experience: 1 sub. teacher: 1
2nd bio cohort	mini-rotations (0.25 course/sem.) 7 bio freshmen 1 left TCNJ	TCNJ's MUSE: 1 r-soph	Join lab; research (0.5 course/sem.) 6 sophomores	TCNJ's MUSE: 5 r-juniors	Research (1 course/sem.) 6 juniors 3 natl. prof. conf. 2 reg. prof. conf. 1 left program	REUs: 3 r-seniors	Research (1 course/sem.) 5 seniors/grads			started MSc: 1 tech, apply PhD : 1 research tech : 1 science teacher : 2
3rd bio cohort	mini-rotations (0.25 course/sem.) 7 bio freshmen 1 left program	TCNJ's MUSE: 6 r-sophs	Join lab; research (0.5 course/sem.) 6 sophomores 2 natl. prof. conf. 1 reg. prof. conf.		REUs: 3 r-juniors	Research (1 course/sem.) 6 juniors 3 left program	REUs: 2 r-juniors	Research (1 course/sem.) 3 seniors/grads 2 natl. prof. conf. (so far)		
4th bio cohort	mini-rotations (0.25 course/sem.) 4 bio freshmen		Join lab; research (0.5 course/sem.) 4 sophomores							

Gateway Elements

Biology NSF funded

NOW : School of Science TCNJ & SoS funded

1st S. of Science cohort

School of Science
11 freshmen
6 bio, 1 chem
2 comp sci.
1 physics, 1 math

Recruitment of admitted, meritorious URM students	List from Admissions; Letters from Bio PI Bio faculty committee	List from Admissions; Letters from SoS Dept. faculty committees
First-year research experience	4-6 mini-rotations, lasting 4-6 weeks, through diverse faculty-student research labs (coordinated by Bio PI)	Bio: mini-rotations (coordinated by Dept. Chairs) Chemistry: meeting w/ faculty; research shadowing CS: shadowing research students in lab Math: monthly talks about faculty research Physics: shadowing in labs All: attending colloquia
Sustained AY research experience	Join lab as sophomore, stay through graduation; course credit each semester; two count toward major, including capstone; become a peer research mentor. Extra funds for labs.	Bio: see left Other departments: under consideration Extra funds for labs (SoS funded)
TCNJ's Mentored Undergraduate Summer Experience (MUSE)	One full-time summer of research with their faculty mentor.	Same (SoS funded)
Merit scholarship monies	Paid in Junior (\$9,000) and Senior (\$6,600) years (earlier for later cohorts; mid-grant change in timing due to NSF's ARRA funding)	Gateway portion of TCNJ merit-grant up to \$8,000 each year for four years; repurposed already-existing merit scholarships for URM students; handled by Admissions & Financial Aid Office
Travel to present research with mentor at regional and national professional conferences	Regional conference – junior year National conference – senior year (typical)	Same (SoS funded)
GRE prep course	Group or individual on-line course (coordinated by Bio PI)	Same (SoS funded & coordinated)
Programming & Community Building	Career, grad school prep workshops; student & family celebrations; trips to R1 univs. (coordinated by Bio PI)	Same (SoS funded & coordinated)

REUs

- UC Berkeley
- U Central Oklahoma/Turkey
- U Kentucky
- U Washington/Friday Harbor
- Princeton U (two)
- Pepperdine U
- Carey Institute of Ecosystem Studies
- Miami U of Ohio
- Weill Cornell/Rockefeller/Sloan-Kettering
- Purdue U

Graduate Schools

- UCLA (PhD)
- Weill Cornell Medical College (MD/PhD)
- New York Medical College (PhD)
- U Penn (PhD)
- Rutgers U (MSc)



Challenges :

- Encouraging more qualified students to apply to Gateway.
- Identifying meaningful URM status.
- Higher retention of African Americans in Gateway.
- Increasing departmental capacity for Gateway Scholars.
- Post-graduation tracking.

Acknowledgements Many thanks to the terrific Gateway Scholars and their peer mentors, who make it such a pleasure to teach at TCNJ; to the TCNJ faculty mentors who work so closely with our Gateway Scholars; to Dean Jeff Osborn for his vision and support for broadening the program throughout the School of Science; to Assistant Dean Laurel Leonard for taking over program coordination; to TCNJ Admissions for partnering with SoS to make scholarships available. Thanks to the National Science Foundation for funding the first few years, through the Undergraduate Research and Mentoring in Biology program NSF-DEB- 0933977, "Gateway to Graduate School: Faculty-Student Collaboration in Environmental and Model Organism Biology", PI J.A. Morrison.

	Invited to Apply	Applied	Accepted	Matriculated
Biology	119	15	5	6*
Chemistry	24	5	1	1
Comp. Sci.	37	9	3	2
Math/Stats	22	9	2	1
Physics	11	2	1	1
			*1 deferred from previous year	
Totals	213	40	12	11

Underrepresented group	Discipline(s)	# Entered Gateway	Number remaining in or graduated from program
African American	Bio, Chem CS, Math	14	9 (64%)
Hispanic American	Bio, Physics	25	22 (88%)
Total		39	31 (79%)