



Building Bridges Across Riverside Through Water Quality Research

Proposal 2006-03481

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&

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Outline

- Institutions and Agencies/Organizations Involved
- CSREES\USDA Relevant Priority or Mission Area
- USDA Collaborator
- Objectives
- Activities
- Beneficiaries
- Evaluation
- Expected Impact
- Quantify beneficiaries



Institutions and Agencies/Organizations Involved



- PIs (Smith at RCC and Walker at UCR)
- UCR PhD student (Berat Haznedaroglu)
- RCC students (two per year)
- Mentors:
 - Guillermo Aguillar, Professor and Faculty Advisor to Society of Hispanic and Professional Engineers (SHPE) Chapter at UCR
 - Victor Rodgers, Professor and Faculty Advisor to National Society of Black Engineers (NSBE) Chapter at UCR



Priority or Mission Area

- To address the USDA's goal to **expand and diversify the nation's scientific work force.**
- **Goal 5, Objective 5.2:** "Provide science-based knowledge and education to improve the management of soil, air, and water resources to support production and enhance the environment"



USDA Collaborator

- **Dr. Scott Bradford**
 - Soil scientist
 - USDA Staff Scientist
 - Salinity Laboratory

USDA  United States Department Of Agriculture
Agricultural Research Service



Objectives

- **To provide Riverside Community College (RCC) students from underrepresented backgrounds**
 - an experiential learning opportunity in cutting-edge water quality research
 - exposure to a four-year college environment at the University of California, Riverside (UCR).
- **To motivate students to pursue a career in science and engineering.**



Beneficiaries

- 2 RCC students per year in research program
- Numerous RCC students per year outreach seminars (50-100 per seminar)
- Numerous Riverside K-12 students participating in science fair



Evaluation

- **Formative and Summative Assessment** for Student Participants in Research Program
- **Case Studies**
- **Surveying of RCC students**
- **Assessment Advisory Committee (UCR Graduate School of Education):**
 - David Berman (PhD student)
 - Professor Douglas Mitchell
 - Professor Robert Ream



Activities

- Summer Research Experience (SRE) for 2 RCC students per year
- Academic year part-time research
- Involvement in UCR student organizations SWE, NSBE, and SHPE
- Present at Southern California Conference on Undergraduate Research (SCCUR)



Activities

- **Community College Outreach**
 - Seminar series
 - Recruiting events
- **K-12 Outreach**
 - Participation of PDs as judges at the annual Riverside Unified School District Science Fair
 - Establishment of a special award called the “USDA Future Environmental Scientists and Engineers Award”



Expected Impact

- Will **recruit** more students into science and engineering fields and **retain** them through graduation.
- Will **diversify** the ranks of America's scientists and engineers



Expected Impact

RCC:

- District is one of the **most diverse districts** in the state of California
- **53%** from **Hispanic, African American, or Native American backgrounds**
- **Title V school** and is considered a **Hispanic Serving Institution (HSI)**
- **33.4%** of our students from Hispanic origin



Expected Impact

UCR:

- one of America's most successful institutions for graduating underrepresented minorities
- Overall graduation rate is **66%**
- Graduation rate for underrepresented minorities is **68%**

*from study published by The Education Trust



Year 1 RCC Students

- **DJ Cummings**
 - Biology student
- **Jose Avila**
 - Pre-engineering student

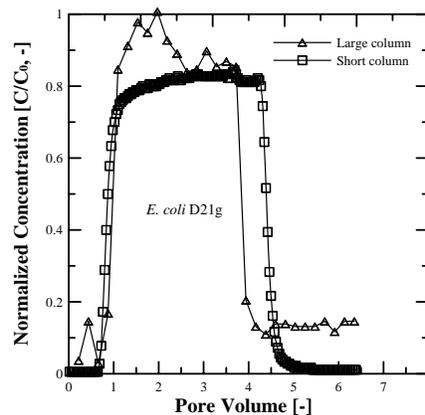
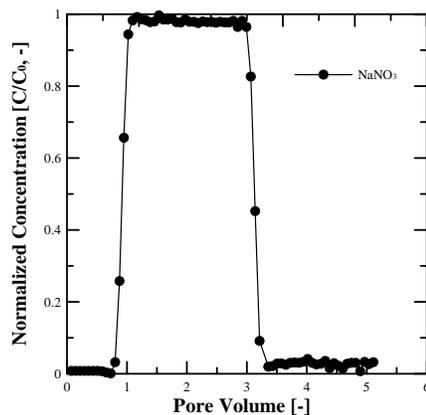


Experimental Progress

- **Research project goals:**
 - Determine the physical and chemical factors influencing pathogen transport in groundwater environments
 - Establish how environmental factors impact phenotypic and genotypic virulence factors.
- **Work to date:**
 - Bacterial culturing and handling techniques
 - Phenotypic analysis: cell size, viability, and zeta potential analysis
 - Packed-bed column experiments



Experimental Progress



Evaluation

- **The specific *performance-based* objectives of the project are as follows:**
 1. To involve underrepresented students in high-level research through the summer research experience (SRE) in a USDA priority area
 2. To provide an ongoing experiential learning opportunity for RCC students through part-time jobs during the academic year in an environmental engineering laboratory at UCR.
 3. To encourage RCC students to complete their degree from the two year institution (RCC) through ongoing mentoring from PDs, a USDA research staff member, and UCR students (through SHPE/NSBE/SWE chapters).
 4. To encourage RCC students to transfer to a research institution (UCR) to earn their bachelor's degree through ongoing mentoring from PDs, a USDA research staff member, and UCR students (through SHPE/NSBE/SWE chapters).



Future Updates

Please visit....

www.bridges.engr.ucr.edu

