

University of Pittsburgh

Annual Progress Report: 2008 Nonformula Grant

Reporting Period

July 1, 2009 – June 30, 2010

Nonformula Grant Overview

The University of Pittsburgh received \$4,708,555 in nonformula funds for the grant award period June 1, 2009 through May 31, 2013. Accomplishments for the reporting period are described below.

Research Project: Project Title and Purpose

Center of Excellence in Prevention and Control of Antibiotic Resistant Bacterial Infections – The primary goals of this project are to employ novel strategies to reduce the morbidity and mortality caused by *Acinetobacter baumannii*, *Clostridium difficile*, and methicillin-resistant *Staphylococcus aureus* (MRSA) in hospitalized patients and to develop a research training program for racial minorities that are underrepresented in biomedical, health services, and clinical research. We plan to develop and test new tools that will lead to substantial reductions in disease caused by these organisms.

Anticipated Duration of Project

6/1/2009 - 5/31/2013

Project Overview

The specific aims of the Center of Excellence in Prevention and Control of Antibiotic Resistant Bacterial Infections are to:

1. Develop, validate, and employ novel molecular detection of asymptomatic *C. difficile* carriage and assess an intervention to control this source of *C. difficile* disease;
2. Understand the implications of introduction of community-associated MRSA strains into the hospital and employ rapid, polymerase chain reaction (PCR)-based diagnosis of MRSA infection to reduce use of broad spectrum antibiotics;
3. Develop a new, multilocus variable number tandem repeat analysis (MLVA) assay for tracking transmission, validate improved methods for detecting *A. baumannii* colonization, and assess an intervention to control spread in intensive care units;
4. Employ infectious diseases modeling to understand the health and economic impacts of these novel strategies on the prevention and control of serious infections caused by these bacterial pathogens; and

5. Establish a research training program for racial minorities that are underrepresented in biomedical, health services, and clinical research.

Principal Investigator

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Expected Research Outcomes and Benefits

By the end of this four-year project, we will have developed and tested new tools that will lead to substantial reductions in disease caused by our targeted organisms.

Summary of Research Completed

Summary of research completed for Specific Aim 1 (*C. difficile*)

Sub-Aim 1. Prevalence of asymptomatic *C. difficile* carriage and environmental contamination.

Methods

4,976 peri-rectal swabs collected from 7/26/09–11/19/09 for vancomycin resistant *Enterococcus* (VRE) were cultured for toxigenic *C. difficile* from 3,003 patients. Environmental samples were taken from six rooms of five inpatients with recovery of toxigenic *C. difficile*. VRE swab isolates from these five patients and their rooms were genotyped by multilocus variable number tandem repeat analysis (MLVA).

Results of data generated (1)

Toxigenic *C. difficile* (CD) was cultured from 132 /2,046 (6.5%) patients with no history of stool testing for *C. difficile*. Of these, 19 (14.4 %) and 113 (85.6 %) patients were VRE+ and VRE-, respectively. CD was cultured from 5/6 rooms sampled at 15/30 sites. 46/74 (62%) and 70/142 (49%) swabs collected ± 3 and ± 7 days of a positive CD stool test were positive for CD, respectively.

(1) Curry SR, Gee JL, Marsh JW, Shutt K, Muto CA, Pasculle AW, et al. Detection of Asymptomatic Carriage of Toxigenic *C. difficile* by Culture of VRE Surveillance Swabs in an Academic Medical Center. Fifth Decennial International Conference on Healthcare Associated Infections; March 18–22, 2010; Atlanta, GA 2010. p. LB 16.

Sub-Aim 2. Determine genetic relatedness of *C. difficile* isolates from asymptomatic colonized patients to *C. difficile* isolates from the environment and from patients with hospital-acquired *C. difficile* infections (HA-CDI).

Methods

Toxigenic culture was performed for all CD toxin-positive stool samples collected in addition to swabs done for sub-aim 1. MLVA was performed to determine the genetic relationship among isolates.

Results of data generated

C. difficile was isolated from 58 patients with HA-CDI and 132 asymptomatic carriers. Of the HA-CDI isolates, 7/58 (12.1%) were associated only with asymptomatic carriers, 7/58 (12.1 %) were genetically related only to other stool isolates, 16/58 (27.6 %) HA isolates were associated with both asymptomatic carriage and stool isolates, and 28/58 (48.3%) were not associated with any isolates. At least one environmental isolate matched the patient's VRE swab isolate in 4/5 patients with environmental contamination. A significant fraction of HA-CDI cases at our institution could potentially be prevented if asymptomatic carriers were identified and isolated. Data for sub-aim 2 have been submitted in abstract form to the 2010 Interscience Conference on Antimicrobial Agents and Chemotherapy meeting in Boston (September 12–15) for consideration as a poster or oral presentation.

Sub-Aim 3. Develop and validate a real-time polymerase chain reaction (RT-PCR) assay for rapid identification of *C. difficile* carriage using perineal swabs.

Methods

96 VRE surveillance peri-rectal swabs from sub-aim 1 were cultured. In addition, eight swabs were obtained from *C. difficile* toxin-positive stools from sub-aim 2. Cultures were incubated at 37°C for 48 hours in selective broth. Cultures positive for *C. difficile* growth (alkaline media) were subcultured. DNA was extracted from 1 ml 48-hour broth cultures by NucliSENS® easyMag® (bioMérieux). Real-time PCR detection of *tcdB* was performed.

Results of data generated

Of the eight toxin-positive stools, 100% were positive by PCR and 88% (7/8) were positive by toxigenic culture. Of the 96 peri-rectal swabs, 33% (32/96) were positive by PCR and toxigenic culture, 52% (50/96) were negative by PCR and toxigenic culture, and 5% (5/96) were positive by PCR but negative by toxigenic culture. Nine peri-rectal swabs were indeterminate by PCR and negative by toxigenic culture. The sensitivity of this method is 100% (32/32) and the specificity is 90.9% (50/55), with 9/96 indeterminate results.

Data for sub-aim 3 have been accepted as a poster presentation to the Anaerobe Society of the Americas meeting in Philadelphia, PA 7–10 July 2010.

Summary of research completed for Specific Aim 2 (MRSA)

Sub-Aim 1. To compare the incidence of and identify risk factors for development of MRSA infection in subjects colonized with traditional HA-MRSA strains and the epidemic CA-MRSA strain in the hospital setting.

Methods

Patients with MRSA colonization were divided into three cohorts (HA-MRSA, CA-MRSA, Others) based on SCC*mec* typing and J region subtyping, *spa* typing, identification of *pvl* and arginine catabolic mobile element (ACME)-*arcA* genes, and pulsed-field gel electrophoresis (PFGE). Development of infection 48 hours to six months after a subject was enrolled in the MRSA colonized cohorts was determined by an infectious diseases physician and infection control professionals. A subset of the clinical and corresponding nasal isolates from subjects who developed MRSA infection was analyzed by PFGE to determine whether the strains matched.

Results of data generated

A total of 1,016 subjects with MRSA nasal colonization were included: 680 (66.9%) with HA-MRSA, 182 (17.9%) with CA-MRSA, and 154 (15.2%) in the Others group. A total of 119 subjects (11.7%) developed clinical MRSA infection during six month follow-up. Out of 24 corresponding nasal and clinical isolates, 23 (95.8%) gave an exact PFGE match. The relative risk (RR) of development of MRSA infection or bacteremia in the CA-MRSA versus HA-MRSA group was not significantly different on univariate analysis. Time to MRSA infection was also not significantly different between the two groups. The risk of development and types of MRSA infection among subjects colonized with epidemic CA-MRSA was not significantly different from subjects colonized with HA-MRSA. The MRSA-colonized subjects who developed MRSA infection were infected with the same strain they were colonized with.

Summary of research completed for Specific Aim 3 (*A. baumannii*)

Sub-Aim 1. To develop and validate a multilocus variable number tandem repeat analysis (MLVA) assay for molecular typing of *A. baumannii*.

Methods

Multilocus sequence typing (MLST) and pulsed-field gel electrophoresis (PFGE) were conducted on multidrug-resistant *A. baumannii* clinical isolates. Four new candidate loci for MLVA, in addition to the two that have been published by others, were identified and validated on representative isolates.

Results of data generated

MLST and PFGE were conducted on more than 30 isolates from UPMC as well as isolates obtained from hospitals in five other states, with the primary aim of establishing a reference molecular typing database to validate MLVA. The majority of isolates from across the United States were found to belong to sequence type (ST) 122, which belongs to the European epidemic clone II. Of the four new MLVA candidate loci, those adjacent to a putative pilus assembly protein and a putative metal transporter protein have a variable number of repeats and will be further assessed in a larger pool of isolates.

Sub-Aim 2. To implement an active surveillance program at UPMC Mercy for patients who are colonized with MDR *A. baumannii* and to determine the effectiveness of this intervention.

Methods

Patients admitted to UPMC who had a clinical culture positive for MDR *A. baumannii* (MDR-AB) underwent screening cultures of various body sites by sponges (forehead, upper arm, and thigh) and swabs (forehead, nostrils, pharynx, axilla, antecubital fossa, groin, and toe web). After 1 or 24 hours of enrichment, modified Leeds Acinetobacter medium containing vancomycin 10 mg/L and aztreonam 4 mg/L or ceftazidime 8 mg/L were inoculated. Pink colonies with mauve background were confirmed as MDR-AB by biochemical tests.

Results of data generated

A total of 46 patients were enrolled. There was no significant difference isolating MDR-AB using either aztreonam or ceftazidime in the medium. The 24-hour enrichment process significantly increased the sensitivity across body sites. Use of sponges provided superior sensitivity to swabs overall. Swiping of the thigh with a sponge yielded the best sensitivity, which was significantly higher than those of the most sensitive swab sites when using overnight enrichment and medium containing ceftazidime (82.6% vs. 52.2% for pharynx, $p = 0.003$; 82.2% vs. 48.9% for groin, $p = 0.0003$). The sensitivity of sponge culture increased further to 88.9% when both upper arm and thigh were swiped.

Summary of research completed for Specific Aim 4 (modeling)

Economic Model of Routine Universal MRSA surveillance for all hospital admissions:

Methods

We developed a stochastic computer simulation model to determine the potential economic impact of performing MRSA surveillance (i.e., single culture of an anterior nares specimen) for all hospital admissions from the societal and third party-payor perspectives. Patients with positive surveillance culture results were placed under isolation precautions to prevent transmission. MRSA-colonized patients who were not isolated could transmit MRSA to other hospital patients.

Results of data generated

Our model found the performance of universal MRSA surveillance to be cost-effective (defined as an incremental cost-effectiveness ratio [ICER] of less than \$50,000 per quality-adjusted life-year) when the basic reproductive rate was 0.25 or greater and the prevalence was 1% or greater. Surveillance was the dominant strategy when the basic reproductive rate was ≥ 1.5 and the prevalence was $\geq 15\%$, the basic reproductive rate was ≥ 2.0 and the prevalence was $\geq 10\%$, and the basic reproductive rate was ≥ 2.5 and the prevalence was $\geq 5\%$. Therefore, universal MRSA surveillance of adults at hospital admission appears to be cost-effective at a wide range of prevalence and basic reproductive rate values.

Economic Impact of *Acinetobacter baumannii* in the Intensive Care Unit (ICU)

Methods

Using TreeAge Pro 2009 (TreeAge Software, Williamstown, MA), we developed a stochastic decision analytic computer simulation model that determined additional costs associated with *A. baumannii* in the ICU from the hospital perspective. An extended length of stay (LOS) from *A.*

baumannii infection resulted in a loss of a hospital bed that could have been used by other patients and corresponding lost revenues. Our model compared an ICU patient colonized with *A. baumannii* versus a patient not colonized. Each colonized patient then had a probability of remaining simply colonized or developing an active *A. baumannii* infection, resulting in an increased LOS and increased mortality. Based on findings from our literature search, colonization without infection did not affect a patient's LOS.

Results of data generated

The per patient *A. baumannii*-attributable costs increased as the proportion of patients who carry *A. baumannii* and develop infection increased. For example, for a 20% infection probability, each case of *A. baumannii* colonization cost a hospital \$8,246 (standard deviation: \$4,472). Increasing the probability of infection to 70% increased the cost to the hospital to \$29,019 (standard deviation: \$15,977).

These numbers could confer a considerable economic burden to hospitals. For example, when a hospital in the UPMC system experienced an epidemic of *A. baumannii* in 2008, 25 of 626 patients were found to be colonized with the organism upon admission to the ICUs during a six-month period (prevalence of 4.0%), which would translate to a yearly cost to the hospital of \$412,291–\$1,621,199. Between 2006 and 2007, 463 hospitals reported health care-associated infections to the National Healthcare Safety Network. Of the 28,502 reported infections, *A. baumannii* caused 902 (2.7%), which would result in costs ranging from \$7.4–\$26.1 million.

Citation: Lee BY, McGlone SM, Doi Y, Bailey RR, Harrison LH. Economic Impact of *Acinetobacter baumannii* in the Intensive Care Unit (ICU). *Infect Control Hosp Epidemiol*. 2010; In Press

An Economic Model of Universal *Clostridium difficile* Surveillance for Hospital Admissions

Methods

We constructed a probabilistic decision analytic computer simulation with dynamic transmission elements to determine the potential economic impact of performing surveillance for *C. difficile* carriage for all hospital admissions from the societal, hospital, and third-party payor perspectives. Sensitivity analyses explored how this impact may vary with different *C. difficile* prevalence and reproductive rates (R_0), test costs, and contact isolation efficacy thresholds.

Results of data generated

The health care resource use approach showed that performing *C. difficile* testing was economically dominant (less costly and more effective than no testing) at the following thresholds: $R_0 \geq 0.5$, prevalence ≥ 0.01 , isolation efficacy $\geq 50\%$. The opportunity cost of lost bed-days approach showed performing surveillance to be cost-effective (ICER < \$80,412/disability-adjusted life years prevented) and, in most cases, economically dominant when $R_0 \geq 1$, prevalence ≥ 0.01 , isolation efficacy $\geq 50\%$. Our computer simulation suggests that developing ways to routinely screen hospital inpatients for *C. difficile* may be cost-effective for a wide range of *C. difficile* prevalence and reproductive rates, test costs, and contact isolation efficacy.

The *C. difficile* models have resulted in the following manuscript submissions:

Lee BY, Popovich MJ, Tian Y, et al. An economic evaluation of *Clostridium difficile* diagnostic tests.

Lee BY, Popovich MJ, Tian Y, et al. An economic model of universal *Clostridium difficile* (*C. difficile*) surveillance for hospital admissions.

Summary of activities completed for Specific Aim 5 (Minority Training)

Specific Aim 5: Establish a research training program for racial minorities that are underrepresented in biomedical, health services, and clinical research. Two programmatic initiatives are in place to support this aim: 1) short-term summer training and 2) nine-month post baccalaureate training.

1. Summer Training

One training component of the project is a seven-week research program, the goal of which is to expose underrepresented and disadvantaged students to biomedical research in infectious diseases, specifically, methicillin-resistant *Staphylococcus aureus* (MRSA), *Clostridium difficile*, and *Acinetobacter baumannii*. To support this programmatic aim, students funded by this grant were recruited from the applicant pool of and participated in the University of Pittsburgh School of Medicine's Summer Premedical Academic Enrichment Program (SPAEP), Level II.

Program Structure (SPAEP)

The training curriculum requires each student to:

- Spend 4.5 days each week in an assigned laboratory performing mentored research
- Engage in medical school application skills seminars taught by staff and faculty in the School of Medicine's Offices of Admissions, Diversity Programs, and Medical Education
- Receive reading and study skills assessment (and remediation, if needed)
- Attend test preparation workshops
- Spend one to two afternoons shadowing clinicians
- Attend weekly Brown Bag Lunch seminars given by underrepresented School of Medicine faculty, residents, and community physicians
- Participate in social activities held in conjunction with other SOM summer programs
- Participate in a "mock interview" with a School of Medicine faculty member and receive feedback on performance
- Present her/his research to an audience of peers and mentors
- Complete a preceptor-reviewed/approved research paper

The \$4,000 stipend allotted for each trainee provides supervised housing in a University of Pittsburgh dormitory, meals, student health insurance, travel, and expenses. Several social activities are hosted to allow students to become familiar with cultural resources in the city and to network with underrepresented professional role models.

All curricular materials and faculty are supported/provided by the School of Medicine. Staff from the Offices of Admissions and Financial Aid and Student Affairs/Diversity Programs serve

as the faculty for the admissions skills workshops, and a medical student or former program participant serves as the student coordinator. Richard Levitt, the School of Medicine’s academic development coordinator, provides the study and reading skills assessment and meets individually with each student to discuss his/her approach to learning as it relates to each student’s future goals.

The student coordinator encourages bonding within the group, manages the social dynamic, and helps the students to become comfortable within the School of Medicine and the City of Pittsburgh. The coordinator also works with other summer staff to ensure interaction with students in SPAEP Level I (a seven-week classroom-based program for early premed students) and the entering medical students in the Summer Prematriculation Program.

Admission Procedures

Students apply for admission to the School of Medicine’s summer premedical programs through an on-line application portal, submitting transcripts, letters of recommendation, and a goal statement as supporting documentation. For summer 2009, 173 students submitted the basic application, and 114 completed their applications with all required documentation. For summer 2010, 271 submitted the basic application and 161 submitted complete applications.

Students for the non-formula grant training program were selected according to the grant requirements (underrepresented, attention to Pennsylvania historically black colleges and universities [HBCUs]). The non-formula trainees to date have been:

Student	Home Institution	Preceptor
2009		
Michael Daniel	University of Pittsburgh	JoAnne Salangsang, MD
Bridget Parker	Cheyney University	Yohei Doi, MD/PhD
2010		
Jeneana Parks	Lincoln University	Diana Pakstis, RN, BSN
Moises Baltazar Garcia	Florida Atlantic University	Bruce Lee, MD, MBA
Opeyemi Akinbamidele	Lehigh University	Jane Marsh, PhD
Mya Staton	Tuskegee University	Jane Marsh, PhD

Since the summer of '09, Michael Daniel has entered the 2010-11 applicant pool for the School of Medicine for the MD degree. Bridget Parker entered the graduate program in nutrition and wellness in the School of Health and Rehabilitation Sciences.

Outcomes

Our goal for the first summer was to recruit an excellent class and engage the students with cutting-edge research and preceptors who would truly mentor them. We were highly successful in meeting that goal. The ability to engage students at increasing levels of complexity is important to developing their curiosity and critical thinking ability, as well as maintaining their interest in careers in health and/or biomedical science.

Summer Internship Students

Bridget Parker was recruited from the School of Medicine's Summer Premedical Academic Enrichment Program (SPAEP) for the internship associated with *Acinetobacter*. Training: Bridget learned the basic techniques required in a microbiology laboratory, including identification of species and susceptibility testing. Under our supervision, she processed specimens from two patients who were enrolled in our study during her training period.

Accomplishment: Bridget gave an oral presentation on the study at the University of Pittsburgh at the conclusion of her training at Pitt's Summer Premedical Academic Enrichment Program. The title of her presentation was "Multidrug-Resistant *Acinetobacter baumannii*."

Michael Daniel was an undergraduate summer student who was trained in techniques for molecular typing of MRSA. Training: Michael determined the distribution of SCCmec types among MRSA nasal isolates and described antimicrobial susceptibility patterns of hospital acquired versus community acquired MRSA strains among a collection of 50 previously typed MRSA blood isolates. Accomplishment: Michael became proficient in single and multiplex PCR for SCCmec typing, as well as gel electrophoresis. He evaluated differences in antimicrobial resistance patterns of CA-MRSA and HA-MRSA blood isolates. In addition, Michael gained other practical skills such as being able to critically evaluate scientific literature, design a scientific poster and PowerPoint presentation, and present data to a scientific audience. He gave an oral presentation on the study at the University of Pittsburgh at the conclusion of his training in the Summer Premedical Academic Enrichment Program. The title of his presentation was "Proportion of SCCmec Types of Methicillin-Resistant *Staphylococcus aureus* (MRSA) and Analysis of Antimicrobial Susceptibility Patterns of Healthcare-associated vs. Community-Associated MRSA among Blood and Nasal Screening Cultures at UPMC Presbyterian."

2. Post-baccalaureate students

To meet the goals of the post-baccalaureate training aim, we created the University of Pittsburgh Intramural Research Training Award (UPIRTA) program

<http://www.healthdiversity.pitt.edu/programs/upirta.php>, a nine-month to one-year post-baccalaureate experience for underrepresented students who are interested in biomedical graduate training. UPIRTA includes two research pathways: autism (Minshew lab) or antibiotic resistant infectious disease (Harrison lab). This report addresses the latter. Experiences begin in fall of each award year.

All students are eligible to apply; however, as funding comes from the Commonwealth of Pennsylvania, preference in admission is given to:

- Students from Lincoln and Cheyney Universities (Pennsylvania's two HBCUs)
- University of Pittsburgh
- Pittsburgh-area and Pennsylvania natives

Students are recruited through presences at minority pre-health and graduate opportunity fairs (such as the Annual Biomedical Research Conference for Minority Students, the Society for the Advancement of Chicanos and Native Americans in Science, and the Chaka Fattah Graduate Opportunities Conference). In addition, the program is marketed through the Honors Programs of Lincoln and Cheyney Universities and through the membership of the National Association for Advisors of the Health Professions.

Year 1: 2009-10

Aggressive marketing of this new program brought us 11 applicants. As the goal of UPIRTA is to encourage students to consider careers in biomedical research, applicants were vetted by training director Paula Davis, MA, and John Horn, PhD, graduate dean of the School of Medicine. It was vital to select students who had the interest and potential for success (as judged by GPA and prior research activity). Of the 11 applicants, two were selected, and both chose to work on the antibiotic resistance project. We were pleased to admit the following students:

2009-10		
Student	Undergraduate Institution	Preceptor
Tatianna Henderson	Lincoln University	Scott Curry, MD
Esenwa Obi Onuoha	Virginia Union University	Yohei Doi, MD/PhD

Tatianna K. Henderson was recruited for the *C. difficile* component of the project. Training: Tatianna has been trained in operation and maintenance of the Coy anaerobic chamber, isolation of *C. difficile* from specimens, cell culture cytotoxicity testing, routine PCR and gene sequencing, RT PCR assay development for detection of *C. difficile* toxin B (*tcdB*) and *tcdC*, and in MLVA. Accomplishments: Tatianna performed some of the routine laboratory work for *C. difficile* sub-aims 1 and 2. She was the lead technologist for all of sub-aim 3 and assisted in data analysis for the abstract accepted to the 2010 Anaerobe meeting, on which she is second author.

Ezenwa Obi Onuoha was recruited for the *A. baumannii* component of the project. Training: The techniques Obi learned include species identification, susceptibility testing, PCR and sequencing analysis, and gene cloning. He was instrumental in processing the majority of patients enrolled in sub-aim 2 during the course of the year. He also devoted a significant effort to building the PFGE/MLST database for sub-aim 1. Accomplishments: Obi presented his research at the UPIRTA Research Presentation at Pitt and submitted his findings from Sub-Aim 2 for presentation at the Interscience Conference on Antimicrobial Chemotherapy as the presenting author.

Both students attended orientation along with the entering graduate students since their daily lives would more closely resemble graduate students' routines. In addition to their research, the two students followed a comprehensive schedule of enrichment activities. They were included in all lab meetings and group-wide, comprehensive PA Department of Health progress meetings. To foster their growth and development as prospective graduate students, they were enrolled/participated in:

- The University of Pittsburgh's "Survival Skills and Ethics" program, which is designed to teach graduate students and early career researchers key professional "survival" skills such as making effective presentations, navigating career paths, and obtaining funding
- The University of Pittsburgh/Carnegie Mellon University "Graduate Students of Color" dinner series, an opportunity for graduate students of color across the two institutions to learn

about each other's work, form a support system, and network with key mentors.

http://www.as.pitt.edu/graduate/diversity/dinner_schedule.php

- Sessions for the Career Education and Enhancement for Health Career Research Diversity (CEED) program. Administered by the University of Pittsburgh's Clinical and Translational Science Institute, CEED exists to jump-start the careers of underrepresented researchers by providing them with mentoring, leadership and management skills, and research skill enhancement. <http://www.icre.pitt.edu/ceed/index.aspx>
- "Celebrating Diversity," the Schools of the Health Sciences' annual diversity reception, where all members of the Health Sciences' (Medicine, Dental Medicine, Nursing, Public Health, Pharmacy, and Health and Rehabilitation Sciences) diversity community have an opportunity to meet
- GRE preparation at Kaplan or Princeton Review
- Lunch meetings with a variety of motivated role models and peer mentors
- Each registered for and successfully completed an immunology course

To encourage social integration, staff made an effort to engage the students with any and all social events planned in the various Schools of the Health Sciences.

Both 2009–2010 participants successfully completed nine months of work and concluded their term with public presentations of their work (promotional flyer attached). Ms. Henderson's presentation was titled "Real Time PCR for Detection of Toxigenic *Clostridium difficile* from Peri-Rectal Swabs and Stool Specimens." She will spend 2010–2011 working on a grant in the infectious diseases department while she applies for graduate school. The title of Mr. Onuoha's talk was "Improved Detection of Multidrug- Resistant (MDR) *Acinetobacter baumannii* Carriers with the Use of Sponge and Selective Medium." He currently has a pending position in the University's Department of Immunology.

From a pool of 15 applicants, six trainees for 2010–11 have been selected. Four of the six trainees have elected to work on the antibiotic resistance project. They will be:

Trainee	Undergraduate Institution
Travis Hamilton	University of Pittsburgh
Jesabel Rivera	University of Puerto Rico
Nikita Brown	Lincoln University
Naomii Collier	Cheyney University

The group remains within the target group specified in the grant, with one student from Lincoln, one from Cheyney, one from Pitt, and one Latina from Puerto Rico. All are excellent prospects for graduate training and will benefit from UPIRTA's enrichment. They will be joined in enrichment programming by another class of PA DOH non-formula trainees who will be working in autism research. We expect that the cohort will bond and support each other through training into their professional careers.

University of Pittsburgh
HEALTH SCIENCES DIVERSITY
"Excellence in Health Professions Education"



Join us for the First Annual **UPIRTA RESEARCH PRESENTATIONS**

Please join us for the research presentations of the inaugural class of the University of Pittsburgh Intramural Research Training Award (UPIRTA) program. The 2009-10 class in the department of Infectious Diseases—Harrison Lab are:



Tatianna K. Henderson—"Real Time PCR for Detection of Toxigenic *CLOSTRIDIUM DIFFICILE* from Peri-Rectal Swabs and Stool Specimens"



Obi Onuoha—"Improved Detection of Multidrug-Resistant (MDR) *Acinetobacter baumannii* Carriers with the use of Sponge and Selective Medium"

UPIRTA is funded by the Commonwealth Universal Research Enhancement Program from the Commonwealth of Pennsylvania.

Monday, May 17, 2010
1:00 p.m. - 2:00 p.m.
Scaife Hall, Lecture Room 3

www.healthdiversity.pitt.edu