

# Final Progress Report for Research Projects Funded by Health Research Grants

Instructions: Please complete all of the items as instructed. Do not delete instructions. Do not leave any items blank; responses must be provided for all items. If your response to an item is “None”, please specify “None” as your response. “Not applicable” is not an acceptable response for any of the items. There is no limit to the length of your response to any question. Responses should be single-spaced, no smaller than 12-point type. The report **must be completed using MS Word**. Submitted reports must be Word documents; they should not be converted to pdf format. Questions? Contact Health Research Program staff at 717-783-2548.

1. **Grantee Institution:** Lincoln University
2. **Reporting Period (start and end date of grant award period):** 01/01/2011 to 12/31/2011
3. **Grant Contact Person (First Name, M.I., Last Name, Degrees):** Ms. Rhonda Parris
4. **Grant Contact Person’s Telephone Number:** (484) 365 - 7435
5. **Grant SAP Number:** 4100054857
6. **Project Number and Title of Research Project:** Plasma Protein Biomarkers of Chronic Obstructive Pulmonary Disease in African Americans
7. **Start and End Date of Research Project:** 01/01/2011 to 12/31/2011
8. **Name of Principal Investigator for the Research Project:** Derrick J. Swinton, Ph.D.
9. **Research Project Expenses.**

9(A) Please provide the amount of health research grant funds spent on this project for the entire duration of the grant, including any interest earned that was spent:

\$ 30,998.90

9(B) Provide the last names (include first initial if multiple individuals with the same last name are listed) of **all** persons who worked on this research project and were supported with health research funds. Include position titles (Principal Investigator, Graduate Assistant, Post-doctoral Fellow, etc.), percent of effort on project and total health research funds expended for the position. For multiple year projects, if percent of effort varied from year to year, report in the % of Effort column the effort by year 1, 2, 3, etc. of the project (x% Yr 1; z% Yr 2-3).

Last Name	Position Title	% of Effort on Project	Cost
Swinton	Principal Investigator	25%	\$6,963
Adedotun	Research Technician	100%	\$4,411
Massey	Research Technician	100%	\$2,500
Markes	Research Technician	100%	\$1,500
Hamilton	Research Technician	100%	\$3,000
Ebanks	Research Technician	100%	\$1,800
Diallo	Research Technician	100%	\$2,000
Akede	Research Technician	100%	\$1,000

9(C) Provide the names of **all** persons who worked on this research project, but who *were not* supported with health research funds. Include position titles (Research Assistant, Administrative Assistant, etc.) and percent of effort on project. For multiple year projects, if percent of effort varied from year to year, report in the % of Effort column the effort by year 1, 2, 3, etc. of the project (x% Yr 1; z% Yr 2-3).

Last Name	Position Title	% of Effort on Project
Clark	Research Assistant	25%

9(D) Provide a list of **all** scientific equipment purchased as part of this research grant, a short description of the value (benefit) derived by the institution from this equipment, and the cost of the equipment.

Type of Scientific Equipment	Value Derived	Cost
None		

**10. Co-funding of Research Project during Health Research Grant Award Period.** Did this research project receive funding from any other source during the project period when it was supported by the health research grant?

Yes \_\_\_\_\_ No

If yes, please indicate the source and amount of other funds:

**11. Leveraging of Additional Funds**

11(A) As a result of the health research funds provided for this research project, were you able to apply for and/or obtain funding from other sources to continue or expand the research?

Yes \_\_\_\_\_ No

If yes, please list the applications submitted (column A), the funding agency (National Institutes of Health—NIH, or other source in column B), the month and year when the

application was submitted (column C), and the amount of funds requested (column D). If you have received a notice that the grant will be funded, please indicate the amount of funds to be awarded (column E). If the grant was not funded, insert “not funded” in column E.

Do not include funding from your own institution or from CURE (tobacco settlement funds). Do not include grants submitted prior to the start date of the grant as shown in Question 2. If you list grants submitted within 1-6 months of the start date of this grant, add a statement below the table indicating how the data/results from this project were used to secure that grant.

A. Title of research project on grant application	B. Funding agency (check those that apply)	C. Month and Year Submitted	D. Amount of funds requested:	E. Amount of funds to be awarded:
None	<input type="checkbox"/> NIH <input type="checkbox"/> Other federal (specify:_____) <input type="checkbox"/> Nonfederal source (specify:_)		\$	\$

11(B) Are you planning to apply for additional funding in the future to continue or expand the research?

Yes  No \_\_\_\_\_

If yes, please describe your plans:

An additional year (1-1-2012 through 12-31-2012) of work is being funded by a successive CURE program formula grant.

I am planning to apply for funds that are available through a partnership with the Fox Chase Cancer Center and Lincoln University.

**12. Future of Research Project.** What are the future plans for this research project?

We are planning to continue the research and expand the sample pool so that we can secure enough data and evidence to submit a proposal to the NIH. We are also exploring the possibility of researching genetic risk factors of COPD.

**13. New Investigator Training and Development.** Did students participate in project supported internships or graduate or post-graduate training for at least one semester or one summer?

Yes  No \_\_\_\_\_

If yes, how many students? Please specify in the tables below:

	Undergraduate	Masters	Pre-doc	Post-doc
Male				
Female	6			
Unknown				
<b>Total</b>	<b>6</b>			

	Undergraduate	Masters	Pre-doc	Post-doc
Hispanic	2			
Non-Hispanic	4			
Unknown				
<b>Total</b>	<b>6</b>			

	Undergraduate	Masters	Pre-doc	Post-doc
White				
Black	5			
Asian	1			
Other				
Unknown				
<b>Total</b>	<b>6</b>			

**14. Recruitment of Out-of-State Researchers.** Did you bring researchers into Pennsylvania to carry out this research project?

Yes \_\_\_\_\_ No

If yes, please list the name and degree of each researcher and his/her previous affiliation:

**15. Impact on Research Capacity and Quality.** Did the health research project enhance the quality and/or capacity of research at your institution?

Yes  No \_\_\_\_\_

If yes, describe how improvements in infrastructure, the addition of new investigators, and other resources have led to more and better research.

This project is allowing Lincoln University to establish itself as a premier undergraduate research institution. The PI is partnering with Fox Chase Cancer Center (FCCC), thus allowing the institution access to experienced researchers, and resources/instrumentation not available at Lincoln University. The project is progressing and will position the PI and his collaborators to apply for funding to continue and expand the research project.

**16. Collaboration, business and community involvement.**

16(A) Did the health research funds lead to collaboration with research partners outside of your institution (e.g., entire university, entire hospital system)?

Yes X            No \_\_\_\_\_

If yes, please describe the collaborations:

In addition to working with FCCC, the PI has established partnerships with local shelters/agencies/hospitals/clinics to collect specimens from willing participants. In doing so, the PI was able to provide educational information to the candidates regarding smoking/cessation, COPD, and the importance of participating in research studies. The PI has established an alliance with these organizations and discussions are ongoing to formalize a partnership.

16(B) Did the research project result in commercial development of any research products?

Yes \_\_\_\_\_            No X

If yes, please describe commercial development activities that resulted from the research project:

16(C) Did the research lead to new involvement with the community?

Yes X            No \_\_\_\_\_

If yes, please describe involvement with community groups that resulted from the research project:

In addition to working with FCCC, the PI has established partnerships with local shelters/agencies/hospitals/clinics to collect specimens from willing participants. In doing so, the PI was able to provide educational information to the candidates regarding smoking/cessation, COPD, and the importance of participating in research studies. The PI has established an alliance with these organizations and discussions are ongoing to formalize a partnership.

**17. Progress in Achieving Research Goals, Objectives and Aims.**

List the project goals, objectives and specific aims (as contained in the grant application's strategic plan). Summarize the progress made in achieving these goals, objectives and aims for the period that the project was funded (i.e., from project start date through end date).

Indicate whether or not each goal/objective/aim was achieved; if something was not achieved, note the reasons why. Describe the methods used. If changes were made to the

research goals/objectives/aims, methods, design or timeline since the original grant application was submitted, please describe the changes. Provide detailed results of the project. Include evidence of the data that was generated and analyzed, and provide tables, graphs, and figures of the data. List published abstracts, poster presentations and scientific meeting presentations at the end of the summary of progress; peer-reviewed publications should be listed under item 20.

This response should be a DETAILED report of the methods and findings. It is not sufficient to state that the work was completed. Insufficient information may result in an unfavorable performance review, which may jeopardize future funding. If research findings are pending publication you must still include enough detail for the expert peer reviewers to evaluate the progress during the course of the project.

Health research grants funded under the Tobacco Settlement Act will be evaluated via a performance review by an expert panel of researchers and clinicians who will assess project work using this Final Progress Report, all project Annual Reports and the project's strategic plan. After the final performance review of each project is complete, approximately 12-16 months after the end of the grant, this Final Progress Report, as well as the Final Performance Review Report containing the comments of the expert review panel, and the grantee's written response to the Final Performance Review Report, will be posted on the CURE Web site.

**There is no limit to the length of your response. Responses must be single-spaced below, no smaller than 12-point type. If you cut and paste text from a publication, be sure symbols print properly, e.g., the Greek symbol for alpha ( $\alpha$ ) and beta ( $\beta$ ) should not print as boxes ( $\square$ ) and include the appropriate citation(s). DO NOT DELETE THESE INSTRUCTIONS.**

### Abstract

Although Chronic Obstructive Pulmonary Disease (COPD) has been considered a disease prevalent among Caucasians, its prevalence is increasing among African Americans. The goal of this research project is to identify potential proteomic markers that may explain the differential susceptibility and increased prevalence of COPD among African American smokers. We will use protein-profiling to identify molecular pathways and targets related to COPD in an attempt to better understand the pathogenesis of this respiratory disease in African Americans.

We prepared for this project by collaboration with the pulmonary researchers at Temple University, Drs. Steven Kelsen and Salim Merali on a nearly completed project in which RC2 funding was used to establish the iTRAQ proteomics method which will be transferred to the Swinton laboratory. Using Caucasian patient plasma samples, the Anthony Yeung laboratory (FCCC) has discovered 97 proteins whose plasma expression levels changed as a result of COPD manifestation when compared with similar ex-smokers who showed no COPD ( $p < 0.05$  for individual protein). These changes illustrated pathway shifts instead of simply unrelated markers. This approach will be applied to the African American samples already accrued and is anticipated to produce significant results in the course of this project. Initial study will focus on

GOLD IV versus GOLD 0 patients. GOLD = Global Initiative for Chronic Obstructive Lung Disease. GOLD 0 are ex-smokers with no COPD. GOLD IV is ex-smokers with severe COPD. Future studies can include other GOLD stages and non-smoker controls.

The ultimate goal of this work is to address the disparity in COPD research and identify markers that would: (1) predict risk of progression, allowing early intervention studies; (2) predict response and outcome; so that treatment decisions can be individualized; and (3) identify novel pathogenetic pathways as targets for therapy. Because COPD and lung cancer are related, both affected by inflammation, in the future the COPD research can extend to lung cancer in African Americans.

## **Introduction**

Lung cancer, the most common cause of cancer death is often associated with COPD which is the fourth most common cause of death in the United States. Some of the causes of these diseases are in common and they progress through common pathways. For example, smoking, chronic bronchitis, chronic inflammation and aberrant activation of the complement cascade are common in COPD but are also factors important to lung cancer. Inflammation provides a mutagenic environment that may initiate cancer as well as sustain its progression.

To gain insight about these diseases at the levels of the cell, organ, and body system, we analyzed protein factors and pathways detectable in serum proteins that may be important to COPD. African Americans have the highest rate of lung cancer and the lowest success rate in smoking cessation in the US. Thus a broad pathway characterization approach reporting about the whole organism may be more informative than if only lung-specific individual biomarkers of COPD are sought.

The Temple-FCCC collaboration provided access to Caucasian COPD plasma samples and two years of funding during which the methodology required for this project were developed. Two manuscripts have been submitted or are in press and a third one is in preparation related to this previous work. Dr. Kelsen of Temple University will provide additional patient specimens for the proposed study in addition to the samples accrued by Lincoln University. Swinton has analyzed serum and urine samples of African American Smokers to ascertain quantitative information on nicotine and its major metabolites, cotinine and 3-hydroxycotinine. This information will be used, along with the COPD biomarker data, to take a broad based approach to understanding the correlation between nicotine metabolism and COPD. Although the initial methodology and proteomic studies were completed at FCCC, the methodology has been transferred to the Swinton laboratory and work is ongoing. Swinton and his research group are working on completing the following aims:

**Specific Aim 1:** Specifically, testing samples of ten male patients of about 50 to 70 years old from the sample repository housed at Lincoln University.

These samples are being analyzed by iTRAQ proteomics after Seppro IgY14 immunodepletion as was done for the Caucasian patients. Samples will be pooled to minimize the effect of individual variability. Comparison will be performed in technical replicates. Protein cluster and pathway differential regulation in both ethnicities will be compared to suggest similarities and

differences. A strength of the iTRAQ differential expression method is that it is accurate to about 15% precision, making statistical analysis extraordinarily refined.

As discussed earlier, the statistics of ten patients is greatly enhanced by the correlation of pathway changes based on multiple proteins instead of single marker changes that may be more subjected to individual variability. The identified changes will be validated in additional panels of patients to be assembled both at Lincoln University and Temple University.

**Specific Aim 2:** Validation of biomarkers of COPD in African American patient samples at Lincoln University.

Westerns blotting and/or ELISA will be performed on the immunodepleted serum of the African Americans. Western blotting has the advantage of confirming that the signal detected has the correct molecular weight, while ELISA has the advantage of higher sensitivity and dynamic range, in practice, each antibody may be better at one application or the other and has to be determined by experiments.

The two groups of validation experiments are:

(1) The COPD markers discovered in the Temple collaboration, namely GRP78, soluble CD163, IL1AP and MSPT9. These will be validated in the panel of African American patients and African American controls.

(2) The markers discovered in the iTRAQ differential proteomic studies of both Caucasians and African Americans are being tested in African American samples at Lincoln University.

Preliminary data has been collected and is being confirmed for reporting in the Journal of Biotechniques and presentation at the Annual Biomedical Conference for Minority Students.

**18. Extent of Clinical Activities Initiated and Completed.** Items 18(A) and 18(B) should be completed for all research projects. If the project was restricted to secondary analysis of clinical data or data analysis of clinical research, then responses to 18(A) and 18(B) should be “No.”

18(A) Did you initiate a study that involved the testing of treatment, prevention or diagnostic procedures on human subjects?

Yes  
 No

18(B) Did you complete a study that involved the testing of treatment, prevention or diagnostic procedures on human subjects?

Yes  
 No

**If “Yes” to either 18(A) or 18(B), items 18(C) – (F) must also be completed.** (Do NOT complete 18(C-F) if 18(A) and 18(B) are both “No.”)

18(C) How many hospital and health care professionals were involved in the research project?

\_\_\_\_\_ Number of hospital and health care professionals involved in the research project

18(D) How many subjects were included in the study compared to targeted goals?

\_\_\_\_\_ Number of subjects originally targeted to be included in the study  
\_\_\_\_\_ Number of subjects enrolled in the study

**Note:** Studies that fall dramatically short on recruitment are encouraged to provide the details of their recruitment efforts in Item 17, Progress in Achieving Research Goals, Objectives and Aims. For example, the number of eligible subjects approached, the number that refused to participate and the reasons for refusal. Without this information it is difficult to discern whether eligibility criteria were too restrictive or the study simply did not appeal to subjects.

18(E) How many subjects were enrolled in the study by gender, ethnicity and race?

Gender:

\_\_\_\_\_ Males  
\_\_\_\_\_ Females  
\_\_\_\_\_ Unknown

Ethnicity:

\_\_\_\_\_ Latinos or Hispanics  
\_\_\_\_\_ Not Latinos or Hispanics  
\_\_\_\_\_ Unknown

Race:

\_\_\_\_\_ American Indian or Alaska Native  
\_\_\_\_\_ Asian  
\_\_\_\_\_ Blacks or African American  
\_\_\_\_\_ Native Hawaiian or Other Pacific Islander  
\_\_\_\_\_ White  
\_\_\_\_\_ Other, specify: \_\_\_\_\_  
\_\_\_\_\_ Unknown

18(F) Where was the research study conducted? (List the county where the research study was conducted. If the treatment, prevention and diagnostic tests were offered in more than one county, list all of the counties where the research study was conducted.)

**19. Human Embryonic Stem Cell Research.** Item 19(A) should be completed for all research projects. If the research project involved human embryonic stem cells, items 19(B) and 19(C) must also be completed.

19(A) Did this project involve, in any capacity, human embryonic stem cells?

Yes  
 No

19(B) Were these stem cell lines NIH-approved lines that were derived outside of Pennsylvania?

Yes  
 No

19(C) Please describe how this project involved human embryonic stem cells:

**20. Articles Submitted to Peer-Reviewed Publications.**

20(A) Identify all publications that resulted from the research performed during the funding period and that have been submitted to peer-reviewed publications. Do not list journal abstracts or presentations at professional meetings; abstract and meeting presentations should be listed at the end of item 17. **Include only those publications that acknowledge the Pennsylvania Department of Health as a funding source** (as required in the grant agreement). List the title of the journal article, the authors, the name of the peer-reviewed publication, the month and year when it was submitted, and the status of publication (submitted for publication, accepted for publication or published.). Submit an electronic copy of each publication or paper submitted for publication, listed in the table, in a PDF version 5.0.5 (or greater) format, 1,200 dpi. Filenames for each publication should include the number of the research project, the last name of the PI, the number of the publication and an abbreviated research project title. For example, if you submit two publications for PI Smith for the “Cognition and MRI in Older Adults” research project (Project 1), and two publications for PI Zhang for the “Lung Cancer” research project (Project 3), the filenames should be:

Project 1 – Smith – Publication 1 – Cognition and MRI

Project 1 – Smith – Publication 2 – Cognition and MRI

Project 3 – Zhang – Publication 1 – Lung Cancer

Project 3 – Zhang – Publication 2 – Lung Cancer

If the publication is not available electronically, provide 5 paper copies of the publication.

**Note:** The grant agreement requires that recipients acknowledge the Pennsylvania Department of Health funding in all publications. Please ensure that all publications listed acknowledge the Department of Health funding. If a publication does not acknowledge the funding from the Commonwealth, do not list the publication.

Title of Journal Article:	Authors:	Name of Peer-reviewed Publication:	Month and Year Submitted:	Publication Status (check appropriate box below):
1. None				<input type="checkbox"/> Submitted <input type="checkbox"/> Accepted <input type="checkbox"/> Published

20(B) Based on this project, are you planning to submit articles to peer-reviewed publications in the future?

Yes X No \_\_\_\_\_

If yes, please describe your plans:

Preliminary data has been collected and is being confirmed for reporting in the *Journal of Biotechniques* and presentation at the Annual Biomedical Conference for Minority Students.

**21. Changes in Outcome, Impact and Effectiveness Attributable to the Research Project.**

Describe the outcome, impact, and effectiveness of the research project by summarizing its impact on the incidence of disease, death from disease, stage of disease at time of diagnosis, or other relevant measures of outcome, impact or effectiveness of the research project. If there were no changes, insert “None”; do not use “Not applicable.” Responses must be single-spaced below, and no smaller than 12-point type. DO NOT DELETE THESE INSTRUCTIONS. There is no limit to the length of your response.

None

**22. Major Discoveries, New Drugs, and New Approaches for Prevention Diagnosis and Treatment.**

Describe major discoveries, new drugs, and new approaches for prevention, diagnosis and treatment that are attributable to the completed research project. If there were no major discoveries, drugs or approaches, insert “None”; do not use “Not applicable.” Responses must be single-spaced below, and no smaller than 12-point type. DO NOT DELETE THESE INSTRUCTIONS. There is no limit to the length of your response.

None

**23. Inventions, Patents and Commercial Development Opportunities.**

23(A) Were any inventions, which may be patentable or otherwise protectable under Title 35 of the United States Code, conceived or first actually reduced to practice in the performance of work under this health research grant? Yes \_\_\_\_\_ No X \_\_\_\_\_

If “Yes” to 23(A), complete items a – g below for each invention. (Do NOT complete items a - g if 23(A) is “No.”)

- a. Title of Invention:
- b. Name of Inventor(s):
- c. Technical Description of Invention (describe nature, purpose, operation and physical, chemical, biological or electrical characteristics of the invention):
- d. Was a patent filed for the invention conceived or first actually reduced to practice in the performance of work under this health research grant?  
Yes\_\_\_\_\_ No\_\_\_\_\_

If yes, indicate date patent was filed:

- e. Was a patent issued for the invention conceived or first actually reduced to practice in the performance of work under this health research grant?  
Yes\_\_\_\_\_ No\_\_\_\_\_

If yes, indicate number of patent, title and date issued:

Patent number:

Title of patent:

Date issued:

- f. Were any licenses granted for the patent obtained as a result of work performed under this health research grant? Yes\_\_\_\_\_ No\_\_\_\_\_

If yes, how many licenses were granted?\_\_\_\_\_

- g. Were any commercial development activities taken to develop the invention into a commercial product or service for manufacture or sale? Yes\_\_\_ No\_\_\_

If yes, describe the commercial development activities:

23(B) Based on the results of this project, are you planning to file for any licenses or patents, or undertake any commercial development opportunities in the future?

Yes\_\_\_\_\_ No\_\_\_\_\_ **X**\_\_\_\_\_

If yes, please describe your plans:

**24. Key Investigator Qualifications.** Briefly describe the education, research interests and experience and professional commitments of the Principal Investigator and all other key investigators. In place of narrative you may insert the NIH biosketch form here; however, please limit each biosketch to 1-2 pages.

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## BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.

Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Swinton, Derrick J.		POSITION TITLE Associate Professor	
eRA COMMONS USER NAME dswinton			
EDUCATION/TRAINING ( <i>Begin with baccalaureate or other initial professional education, such as</i>			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Lincoln University, Lincoln University, PA University of Delaware, Newark, DE	BS Ph.D.	1990 2001	Chemistry Analytical Chemistry

### Personal Statement

My research efforts are focused on applying and developing proteomic methods and technologies (Mass Spectrometry, 2D Gel Electrophoresis) to understanding the differentially susceptibility to diseases amongst ethnic groups, particularly African Americans. Specifically, I am interested in translating these technologies into clinical settings in efforts to provide researchers and practitioners with tools to aid in understanding why certain populations are impacted and more susceptible to sickness and diseases relative to other populations. My interest is in using these techniques to identify and characterize clinically important biomarkers that may impact ethnic groups differentially, specifically biomarkers that are indicative of or related to smoking-related cancers and COPD. In addition to my research activities, I am the Co-Director/Co-PI on two Lincoln University grants that focus on recruiting, retaining, and preparing minority students for careers in STEM-related disciplines. In my role, I am responsible for developing educational programs that lead to best practices for educating and training minority students. Furthermore, I advise, mentor and teach undergraduate courses within the school of Natural Sciences and Mathematics at Lincoln University. I will have a similar role on the proposed project, Drexel Center for Partnership in Health Disparities Research and Training.

### Positions and Honors

#### Academic Appointments

2011-Present Department Chairperson, Lincoln University, Department of Chemistry  
2007-Present Associate Professor, Lincoln University, Department of Chemistry  
2010 Visiting Research Scientist, University of Pennsylvania, Department of Pharmacology  
2008-Present Adjunct Professor, University of Delaware, Department of Materials Sciences and Engineering  
2002-2006 Part-Time Assistant Professor, Lincoln University, Department of Chemistry  
2006 Visiting Research Scientist, University of Pennsylvania, Department of Chemistry

2006 Visiting Research Scientist, University of Massachusetts, Amherst  
2002-2007 Associate Director, Environmental Science Program, Lincoln University  
2002 Associate Director, Minority Access to Research Careers Program (MARC)

### **Honors**

The Hildrus A. Poindexter Distinguished Research Award (2009)  
Louis Stokes Alliance for Minority Participation Distinguished Service Award (2008)  
Glenn S. Skinner Memorial Prize in Chemistry (2001)  
Theodore Wolf Prize for Outstanding Dissertation (2002)

### **Industrial Appointments**

#### **Product Development Chemist-Coatings and Resins**

1991-1992 PPG Industries Inc

#### **Senior Production Scientist**

1993-1997 Amersham Life Sciences/Biological Detection Systems Incorporated

#### **Senior Research Scientist**

8/2001- 3/2002, Shire Research Laboratories Incorporated

### **Study Sections/Review Panels**

2011 Fellowship: Oncological Sciences Special Emphasis Panel/Scientific Review Group  
2011/05 ZRG1 F09-E (20) L  
2010 Fellowship: Oncological Sciences Special Emphasis Panel/Scientific Review Group  
2011/01 ZRG1 F09-E (20) L  
2010 Ad hoc reviewer for the NIH Director's Award to Promote Diversity in the Scientific  
Workforce (Special Emphasis Panel/Scientific Review Group 2010/08 ZRG1 SBIB-V  
(58) R)  
2010 NIH Study Section: Pre-doctoral Diversity Fellowships Review Panel (IMST29)

### **Professional Memberships**

Association for Biomolecular Resources Facilities  
American Chemical Society  
National Council on Undergraduate Research  
Biophysical Society  
National Organization of Black Chemist and Engineers

### **Membership On Relevant Advisory Committees**

Membership Committee: Association for Biomolecular Resources Facilities

#### **Peer-Reviewed Publications**

1. Single-Molecule probing of Mixed-Mode Adsorption at a Chromatographic Interface.  
Derrick J. Swinton and Mary J. Wirth. Analytical Chemistry. 1998, 70, 5264-5271
2. Spectroscopic Observation of Adsorption to Active Silanols. Melody D. Ludes, Derrick J.  
Swinton and Mary J. Wirth. Analytical Chemistry. 1999, 71,3911-3917

3. Single-molecule adsorption at nanometer indentations, Mary J. Wirth, Derrick J. Swinton, Melody C. Ludes, Leon J. Doneski, Cozette M. Cuppett and Hui Zhang, Proceedings of SPIE, 2000.
4. Lateral Diffusion of DiI at the Interfaces of C<sub>18</sub> and Chromatographic Solvents. Derrick J. Swinton and Mary J. Wirth. Analytical Chemistry. 2000, 72, 3725-3730.
5. Single-Molecule Study of an Adsorbed Oligonucleotide undergoing both Lateral Diffusion and Strong Adsorption Derrick J. Swinton and Mary J. Wirth. Journal of Physical Chemistry B. 2001,105(7), 1472-1477.
6. Single-Molecule of the Lateral Transport of four Homooligonucleotides at the interface of water and chemically modified silica. Derrick J. Swinton and Mary J. Wirth. Journal of Physical Chemistry B. 2001, 105(37) 8679-8684.
7. Analytic solution to the Autocorrelation Function for the Lateral Diffusion and rare strong adsorption. Mary J. Wirth, Melody D. Ludes and Derrick J. Swinton. Applied Spectroscopy. 2001, 55(6) 663-669.
8. Single-Molecule Spectroscopy and Fluorescence Correlation Spectroscopy of the Lateral Transport of the T3 Promoter Primer at a Chemical Interface. Derrick J. Swinton and Mary J. Wirth. Applied Spectroscopy. 2001, 55(8) 1013-1017.
9. Aqueous Extraction of Dried and Fresh Garlic, and Comparative Antimicrobial Susceptibility Testing of Garlic Extracts on Selected Bacteria. John O. Chikwem, Adaeze J. Chikwem, Derrick J. Swinton. Bios. 2008, 79(2), 56-60.
10. Analysis of Nicotine and its Major Metabolites, Cotinine and Trans-3'-Hydroxycotinine, using the Quadrupole Time-of-Flight Mass Spectrometer, Derrick J. Swinton, Daniel Clark, and Titlope Idowu. IHE (Lincoln University) Journal of Science. 2011, 2(1), 19-27.

## Research Support

### Ongoing research Support

#### **Source: The National Institutes of Health/ National Center on Minority Health and Health Disparities (1P20MD003352-01)**

Project: Development of a Quantitative and Sensitive Liquid Chromatographic/Mass Spectrometric Method to Correlate the Metabolic Profile of African American Smokers with Smoking Cessation Rate

Duration: 9/1/2008-6/30/2013 Budget: \$407,000

#### **Source: The United States Department of Defense (58938-CH-REP)**

Project Title: Adsorption Induced Conformational Dynamics of Proteins at Chemical Interfaces.

Goal(s): The goal of this project is to use single molecule spectroscopy to understand the folding dynamics of proteins at chemical interfaces.

Duration: 4/2011-3/2013

Budget: \$487,000

#### **Source: Pennsylvania Department of Health (SAP#4100054857)**

Project Title: Plasma Protein biomarkers of Chronic Obstructive Pulmonary Disease in African Americans

Goal(s): The major goal of this project is to isolate and characterize biomarkers for COPD that may be specific to African Americans

Duration: 01/01/2011-12/31/2011

Budget: \$33,000

**Completed Research Support**

**Source: Pennsylvania Department of Health**

Project Title: Quantitative Method Development of Nicotine and its Metabolites Using Liquid Chromatography/Mass Spectrometry (LC/MS)

Duration: 01/01/2005-12/31/2006

Budget: \$43,000

**Source: The United States Department of Defense (DOD)**

Project Title: Acquisition of Spectroscopic Equipment for Single Molecule Spectroscopic Studies

Duration: 8/2007-8/2008

Budget: \$487,000

**Thesis Advisor**

Mary J. Wirth, Ph.D., W. Brooks Fortune Professor, Department of Chemistry, Purdue University