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):** 1/01/2012 to 12/31/2012

3. **Grant Contact Person (First Name, M.I., Last Name, Degrees):** Martin M. Harrison, B.S.

4. **Grant Contact Person's Telephone Number:** (484) 365-7696

5. **Grant SAP Number**: 4100057666

6. **Project Number and Title of Research Project:** 1 - Plasma Protein Biomarkers of Chronic Obstructive Pulmonary Disease in African Americans

7. **Start and End Date of Research Project:** 01/01/2012 to 12/31/2012

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:

   $45,359.28

   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%	$8,352.78
Hilton	Bio-Repository Coordinator	100%	$5,966.29
Osho	Research Technician	100%	$6,218.48
Ebanks	Research Technician	100%	$1,500.00
Harper	Research Technician	100%	$1,500.00
Diallo	Research Technician	100%	$2,500.00
Jean	Research Technician	100%	$1,000.00
Brown	Research Technician	100%	$450.00

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
None		

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 ___X

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 __X

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	☐NIH ☐ Other federal (specify:_____) ☐ Nonfederal source (specify:_)		$	$

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

Yes __X___ No_____

If yes, please describe your plans:

Lincoln University currently has a RIMI P20 grant funded by the National Institutes of Health. The grant provides support for faculty at Lincoln University to develop and or expand their research projects. Currently, Swinton has an existing research project that is supported by the grant and is eligible to apply and compete for funding to support additional research projects. Swinton will apply for funding to support the COPD project; particularly Swinton will request funds to enlist and collect more samples from COPD candidates.

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

Swinton will continue the research described herein. The sample pool will be expanded so that enough data can be gathered to make a statistically relevant conclusion on the differential analysis of COPD in African Americans relative to Caucasians. A proposal will be submitted to Lincoln University to secure funding from its RIMI P20 to enlist more COPD candidates. Once additional data is acquired, a proposal will be submitted to the NIH, which will focus on exploring the 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 __X___ No_____

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

	Undergraduate	Masters	Pre-doc	Post-doc
Male	1			
Female	5			
Unknown				
Total	**6**			

	Undergraduate	Masters	Pre-doc	Post-doc
Hispanic				
Non-Hispanic	6			
Unknown				
Total	**6**			

	Undergraduate	Masters	Pre-doc	Post-doc
White				
Black	6			
Asian				
Other				
Unknown				
Total	**6**			

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

Yes_____ No ___X

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 __X___ No_____

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

The project has allowed Lincoln University to establish itself as an emerging undergraduate/masters-level 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 will continue and has positioned the PI and his collaborators to apply for additional funding to continue the research project. A needs assessment to establish a graduate program at Lincoln University is underway and the potential areas of focus include Biochemistry, Organic Chemistry, Analytical Chemistry, Neuroscience, Environmental Science, Bioinformatics, and Biology. Once established, the scope of the research described herein, will allow opportunity to attract a graduate researcher.

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 Fox Chase Cancer Center, 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 Fox Chase Cancer Center, 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 (α) and beta (ß) should not print as boxes (□) and include the appropriate citation(s). DO NOT DELETE THESE INSTRUCTIONS.

Abstract

Although Chronic Obstructive Pulmonary Disease (COPD) has been considered a disease prevalent amongst 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 at Fox Chase Cancer Center (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 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.

Western blotting and/or ELISA were 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.

Summary of Results

Preliminary data has been collected and is being confirmed. Because of the limited enlistment of African Americans with COPD, a definitive conclusion regarding the differential analysis of COPD in African Americans relative to Caucasians cannot be made at this time. Swinton will request additional funding from Lincoln University to enlist additional COPD candidates. Nonetheless, we have discovered many genes that are related to African American COPD participants, and some are the same and some different from Caucasians. Because of the complexity of the data we are still analyzing the data. Our institutions have prohibited us from full disclosure until the publication is printed.

In the interim, the iTRAQ method has been validated in Swinton's laboratory and benchmarked against other high-end mass spectrometers. Benchmarking was completed to provide a comparative analysis of the discovery of COPD biomarkers. An abstract discussing the benchmarking of the mass spectrometers was presented at the annual ABRF meeting held during the week of March 2nd thru March 5th. The benchmarking studies were completed using funds awarded to Swinton and Yeung from the NIH and PA department of Health.

The results of the benchmarking experiment conclude that the Orbitrap mass spectrometers are more appropriate for "shotgun" proteomics relative to the triple TOF instrument and the QToF. Nevertheless, it is important to understand the capability of any mass spectrometer and design experiments such that the instruments report accurately the biological and physical phenomena associated with a particular research question. Therefore, it can be concluded that the QToF is appropriate for discovery work and in combination with the QQQ mass spectrometer is more than adequate for quantitative proteomic research. As stated in the abstract, it is also important that researchers have access to additional resources to ensure the integrity and accuracy of ones research findings, thus the need for Core Facilities and collaborations with external expertise. The partnership with FCCC has allowed Swinton access to Core Facilities and external expertise allowing him to advance the research undertaken described herein. Additionally, important biomarkers relevant to African Americans have been discovered and an update is forthcoming upon publication of the submitted research article.

The QToF method is being optimized in efforts to enhance its sensitivity and discovery of low abundance proteins, but it must be noted that it will not have the same performance as the high-end expensive Orbitrap mass spectrometers. However we have received funding to purchase a QQQ which will be used to improve the quantitation of the biomarkers discovered in this research project.

The funds from PA Department of Health were also used to enlist the support of six undergraduate researchers and a Bio-Repository Coordinator. The students benefited from the project in that they were able to participate in a valuable undergraduate research experience. Four of the student researchers have recently graduated. Two of them are preparing to take the MCAT exams in preparation for the medical school application, one is enrolled in a post-baccalaureate program in Georgia and the fourth student is currently applying to graduate school.

Another outcome of the grant was that Lincoln University was able to develop partnerships with community based organizations. This activity is important in that the university has a research center focused on health disparities. The center is a collaborative effort which includes disciplines within its three schools, School of Behavioral and Social Sciences, School of Arts and Humanities, and the School of Natural Sciences and Mathematics. Using the funds we were able to establish community partnerships and promote the activities of the center.

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
_X___No

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

_____Yes
_X___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
____X_ 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):
Easy Access to Mass Spectrometry at Multiple Core Facilities Operating TripleTOF 5600 and Orbitrap Elite/LTQ-Orbitrap Velos/Q Exactive Instruments	Jones, Kelly A., Kim, Phillip D., Patel, Bhavinkumar B, Kelsen, Steven G., Braverman, Alan., Swinton, Derrick J., Gafken, Philip R., Jones, Lisa Nader., Lane, William S., Neveu, John M., Leung, Hon-Chiu E., Shaffer, Scott A. Leszyk, J.D., Stanley, Bruce A., Fox, Todd E., Stanley, Anne , Hall, Michael J., Hampel, Heather, South, Christopher D., de la Chapelle, Albert , Burt, Randall W., Jones, David A., and Kopelovich, Levy, and Yeung, Anthony T.	Journal of Proteome Research Manuscript ID: pr-2013-00307u	March 2013	☒Submitted ☐Accepted ☐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:

A more in depth publication discussing the biomarkers relevant to African Americans will be submitted upon additional collection and analysis of COPD samples.

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. *For Nonformula grants only – include information for only those key investigators whose biosketches were not included in the original grant application.*

BIOGRAPHICAL SKETCH

NAME Swinton, Derrick J.	POSITION TITLE Associate Professor
eRA COMMONS USER NAME dswinton	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Lincoln University, Lincoln University, PA	BS	1990	Chemistry
University of Delaware, Newark, DE	Ph.D.	2001	Analytical Chemistry

Personal Statement

Swinton's 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, Swinton is 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. Swinton is interested 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 his research activities, Swinton is 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 his role, he is responsible for developing educational programs that lead to best practices for educating and training minority students. Furthermore, he advises, mentors and teach undergraduate students and courses within the school of Natural Sciences and Mathematics at Lincoln University.

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_{18} 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

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