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AUTHORITY

USAMRMC ltr, 1 Jun 2001.
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PRINCIPAL INVESTIGATOR: Samuel Shacks, M.D., Ph.D.

Drew University of Medical Science

CONTRACTING ORGANIZATION: Drew-Meharry-Morehouse Consortium Cancer Center
Los Angeles, California 90059

REPORT DATE: October 1999

TYPE OF REPORT: Final

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

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Award Number: DAMD17-98-D-6002
Organization: Drew University of Medical Science
Drew-Meharry-Morehouse Consortium Cancer Center

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[Signature] 09/26/20
# Cancer Prevention and Control Research Manpower Development

**Author(s):** Samuel Shacks, M.D., Ph.D.

**Performing Organization:**
Drew University of Medical Science  
Drew-Meharry-Morehouse Consortium Cancer Center  
Los Angeles, California 90059

**Funding Numbers:**
DAMD17-94-J-4437

**Supporting Agency:**
U.S. Army Medical Research and Materiel Command  
Fort Detrick, Frederick, Maryland 21702-5012

**Abstract:**
The purpose of this four-year project was to implement a nascent three-year manpower development program in breast cancer prevention and control for six post-doctoral fellows at the Drew/Meharry/Morehouse Consortium Cancer Center. Key objectives were for each fellow to develop a research project, submit an application for extramural funding and submit manuscripts to peer reviewed journals.

Fellows included Sherry Crump, M.D., M.P.H., Mosunmola George-Taylor, Ph.D., Tony Highshaw M.D., Vanessa Parker, Ph.D., Ling Wu, Ph.D. and Kangman Zhu, M.D., M.P.H., Ph.D. Mentors included 1) Patricia Matthews-Juarez, Ph.D., Susan Robinson, M.D., M.P.H. and Samuel Shacks, Ph.D., M.D. at Charles R. Drew University, 2) Linda Pederson, Ph.D. and Beverly Taylor, MD of Morehouse School of Medicine, and 3) Louis Bernard, M.D., Margaret Hargreaves, Ph.D., and Kofi Semenya, Ph.D. of Meharry Medical College. Fellows were paired with faculty members and were exposed to a variety of research experiences occurring within DMMCCC and each institution.

Great progress was made by the trainees. The program increased the number of projects and publications relevant to breast cancer among African-American women, expanded the number of faculty members trained in breast cancer research among minority institutions, and increased the pool of minority cancer researchers.
FOREWORD

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For the protection of human subjects, the investigator(s) adhered to policies of applicable Federal Law 45 CFR 46.

In conducting research utilizing recombinant DNA technology, the investigator(s) adhered to current guidelines promulgated by the National Institutes of Health.

In the conduct of research utilizing recombinant DNA, the investigator(s) adhered to the NIH Guidelines for Research Involving Recombinant DNA Molecules.

In the conduct of research involving hazardous organisms, the investigator(s) adhered to the CDC-NIH Guide for Biosafety in Microbiological and Biomedical Laboratories.

[Signature]
PI - Signature
Date
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INTRODUCTION

Breast cancer is a leading cause of morbidity and mortality in American women. African-American women have higher mortality rates for this disease compared to white women. To address this issue, the National Institute of Medicine created several initiatives to increase the number of researchers trained in cancer prevention and control research targeting underserved groups. Unfortunately, success of these activities has been limited. The purpose of this project is to expand the pool of cancer control and prevention investigators addressing issues relevant to minority populations and to expand the research base of the Drew/Meharry/Morehouse Consortium Cancer Center (DMMCCC). The hypothesis to be tested is that with “protected time” and appropriate mentors, doctoral graduates can achieve independent extramural funding for breast cancer research within three years.

BODY

The aims of the study were 1) to recruit six doctoral graduates as research fellows to the DMMCCC, 2) to assign at least one faculty mentor to each fellow, and 3) to expand the number of ongoing research projects in the DMMCCC, specifically in the area of breast cancer. Fellows were paired with faculty mentors from one of three institutions; Drew University of Medicine and Science in Los Angeles, California, Meharry Medical College in Nashville, Tennessee and Morehouse School of Medicine in Atlanta, Georgia. Mentors were responsible for overall guidance of the fellow’s research activities. Mentors met weekly with their assigned fellow(s) and were required to provide quarterly progress evaluations about each fellow to the executive committee of the DMMCCC. Curriculum vitae of fellows and their mentors are in Appendix A.

The first objective of this manpower development project was to recruit two fellows during year one and four fellows during year two. Potential fellows were identified by sending letters about the training program to various universities and by networking with investigators associated with Historically Black Colleges. Selection of each fellow was made by the executive committee of DMMCCC. This was based on 1) a paper from the candidate indicating their status as a doctoral graduate, interests in cancer prevention and control research and willingness to commit to three years of training, 2) good verbal, interpersonal and written skills, and 3) a personal interview by members of the DMMCCC. Two fellows were recruited during year one and four fellows were recruited during year two. Two of the six fellows resigned. One fellow completed six months of the fellowship and transferred to another institution to conduct prostate cancer research. A second fellow resigned because of problems that occurred within the infrastructure of the DMMCCC. She completed two years of the fellowship.

The other three objectives of this manpower development project define the tasks and timelines for each trainee to complete within three years. Each fellow was expected to:

1. Develop and implement a research project with aid of mentors by the end of year one
2. Complete an application for extramural funding by the end of year two
3. Submit manuscript(s) to peer reviewed journals during year three
A description of each fellow accomplishments from October 1, 1994 until September 30, 1999 related to the above tasks is summarized below.

Sherry Crump, M.D., M.P.H., a preventive medicine physician, was mentored by Beverly Taylor, MD, M.P.H. at Morehouse School of Medicine. Dr. Crump completed three years of the fellowship. Her project focused on mammography use among high risk groups. She received extramural funding for her project from the Agency for Health Care Policy and Research. Dr. Crump presented results from her project at several meeting, including Era of Hope Meeting. She submitted a manuscript, "Barriers to Screening Mammography Utilization Among Black Women at Grady Memorial Hospital" to a peer-reviewed journal. It is currently being reviewed for publication. She is an Assistant Professor in the Department of Preventive Medicine at Morehouse School of Medicine and continues her work in cancer prevention and control research.

Mosunmola George-Taylor, Ph.D., a cell biologist, completed approximately two years of the program. Linda Pederson, Ph.D. at Morehouse School of Medicine served as her mentor. Dr. George-Taylor implemented a research project, "Electromagnetic Field Exposure and The Occurrence of Breast Cancer in Women." Her project involved faculty from Morehouse and Meharry. Due to unforeseen problems, her results are not available. During year three, the infrastructure of the DMMCCC changed. She was unable to obtain adequate support to complete her project. Dr. George-Taylor is Associate Professor at Clark Atlanta University and continues to work in breast cancer research.

Tony Highshaw M.D., a doctor training to become a urologist, completed six months of the fellowship. He was mentored by Patricia Matthews-Juarez Ph.D. and Samuel Shacks, Ph.D., M.D. at Charles R. Drew University. During his brief training, he developed an interest in prostate cancer research. His desire to conduct prostate cancer research was so intense that he secured an uncompensated position as a fellow at University of Southern California (USC).

Vanessa Parker, Ph.D., completed approximately 36 months of the fellowship. She was mentored by Patricia Matthews-Juarez Ph.D., Susan B. Robinson, M.D., M.P.H. and Samuel Shacks, Ph.D., M.D. at Charles R. Drew University. During her first 12 months in the program, she earned her Ph.D. in preventive care from the USC. Dr. Parker submitted several proposals for funding. She was awarded extramural funding from the Los Angeles County Breast Cancer Early Detection Program to implement a breast cancer education project within South-Central Los Angeles. Results from her study were presented at several conferences, including Era of Hope, and have been prepared for publication as a brief report. Dr. Parker is a new mother and not known to be currently employed, but previously has affirmed her intention to resume a career in research.

Ling Wu, Ph.D. completed three years of the fellowship in 1999. Louis Bernard, M.D., Kofi Semenya, Ph.D., and Margaret Hargreaves, Ph.D. at Meharry Medical College served as his mentors. He published one paper that was a collaborative endeavor among all three institutions within the DMMCCC. Another manuscript, "Recent Trends in Breast Cancer Incidence Among Black and White Women in Tennessee, 1989-1998" was submitted for possible publication (See-Appendix B1). He prepared a brief report and plans to submit it for publication (See Appendix B13). Dr. Wu submitted a proposal to the Susan B Komen Foundation and is currently awaiting results. He is an
Shacks, Samuel James

Assistant Professor in the Department of Internal Medicine at Meharry Medical College and continues to work in breast cancer research.

Kangman Zhu, M.D., M.P.H., Ph.D. was mentored by Louis Bernard, M.D. and Robert Levine, M.D., M.P.H. at Meharry Medical College. Dr. Zhu completed three years of the fellowship. During that time, Dr. Zhu designed three research projects which were funded by the Department of Defense; 1) An Intervention Study on Screening for Breast Cancer Among Single African-American women Aged 65 and Older, 2) Breast Cancer and Risk Factors Among African-American Women aged 20-54 and 3) Methyl-deficient diets, and risk of breast cancer among African-American women. His manuscript “Estrogen receptor status of breast cancer: a marker of different stages of tumor of different entities of the disease?” was published in Medical Hypotheses. Another manuscript “Methyl-deficient diets, methylated ER genes and breast cancer; an hypothesized association” was published in Cancer Causes Control. He is Associate Professor at Meharry Medical College and continues a career in breast cancer research. He is Co-Investigator of a training program that is an extension of this manpower project.

An unexpected task of the study was to fill a position that was vacated by Tony Highshaw MD. It was difficult to provide another fellow similar training experiences because the DMMCCC had loss funding from National Cancer Institute (NCI). It was subsequently decided to extend the pipeline of cancer prevention and control training to pre and post doctoral students with interests in breast cancer research. These trainees are referred to as Replacement fellows. Two of them (Ida-Jean Davis, DC and Carolyn Rowley) were doctorate candidates and were given full time positions for less than one year. The other students participated in breast cancer research projects for brief periods of time (up to three months). These students were mentored by Susan B. Robinson, M.D., M.P.H. and Samuel Shacks, Ph.D., M.D. at Charles R. Drew University.

Replacement fellows

Doctoral candidates

Ida-Jean Davis, a PhD candidate in preventive care, joined the program in 1998. She completed eight months of the program. During that time, she developed a breast health outreach program aimed at increasing knowledge about breast cancer prevention and control among African-American women. She is still involved in prevention research and has a faculty appointment in the School of Allied Health at Drew University.

Carolyn Rowley, a Ph.D. candidate in psychology, joined the program for six months in 1997. She developed a research protocol regarding quality of life in African-American breast cancer survivors. Her project was as an extension of ongoing research projects with the City of Hope Medical Center, King/Drew Medical Center and University of California in Los Angeles (UCLA) (See Appendix C). She submitted a proposal to Susan G. Komen Foundation. It was not funded. She resigned from the program to complete a Ph.D. and is now pursuing a research career in prostate cancer at UCLA.
Other replacement fellows

Aaron Banks, a fourth-year medical student at UCLA devoted four hours per week for 10 months to the project. His research study was related to breast cancer survival among African-American women. He received a Young Investigator Award for his work. An abstract was presented to the Multi-Cultural Aspects of Breast Cancer Etiology Workshop (See Appendix D1). The abstract is being reviewed for publication in a peer-reviewed journal (See Appendix D2). This research experience enabled him to pursue additional research training at the National Institutes of Health, Bethesda, MD in January 2000.

Lori Carter, a recent college graduate, devoted 50 percent of her time for three months to the training program. Ms. Carter participated in weekly meetings and obtained information about alternative medicine and breast cancer. This information was valuable to breast cancer survivors. She has been retained as Research Assistant at Charles R. Drew University in Los Angeles, CA.

Anthony Kingsley, M.D., Assistant Professor in Internal Medicine at King/Drew Medical Center, devoted 10 percent of his time to the project for 10 months. He participated in weekly meetings and made several presentations regarding breast cancer and nutrition to Drs. Robinson and Shacks and other faculty at King/Drew Medical Center. This experience has increased his interest in breast cancer research and he intends to seek funding to formally develop and evaluate a slide presentation for educating physicians about breast health and nutrition.

The remaining four students worked on the development a Breast Education Program for Teens. The program provides information about the anatomy and function of breasts, breast lumps and techniques of breast self-examination. The program contains graphic images and for that reason data had to be recorded onto a CD. Due to unforeseen problems, the CD is not operational. When the CD is available, it will be forwarded to US Army Material and Command. Each student who contributed to this endeavor is described below.

Melanie Hill, a high-school science teacher, completed six weeks of the training program. She was instrumental in revising the Breast Education Program for Teens. She contributed to the pilot testing of the CD program and assessing the appropriateness of the program for high school students.

Todd Huffman, a community activist, assisted in reviewing the contents of the program to community leaders to ensure that the material was culturally appropriate. He completed three months of training.

Tsage Habte, an instructor in the Department of Internal Medicine at Drew University, completed three months of the program. She assisted in evaluating the appropriateness of the education program among two high school populations. Mrs. Habte desires to continue working in breast cancer research (See Appendix E).

Mary Saunders, a King/Drew medical student, completed three months of the training program. Ms. Saunders was responsible for assisting with pilot testing and revising the program. She intends to seek funding to formally evaluate the Breast Teen Project among minority high school students.
KEY ACCOMPLISHMENTS
Key accomplishment derived from this training program include:

- An expansion in the number of faculty members able to conduct breast cancer prevention and control research at three Historically Black Medical Institutions
- An increase in the number of minority researchers in cancer prevention and control
- An increase in the number of funded projects at minority institutions, most noteworthy is a training grant in breast cancer at Meharry Medical School which is an outgrowth of this manpower program
- An increase in the number of publications and projects relevant to breast cancer and African-American women

REPORTABLE OUTCOMES
Reportable outcomes from this training endeavor are described below.

A. Manuscripts by the Program’s six (6) original Fellows:

1. Sherry Crump, M.D., M.P.H.:


3. Tony Highshaw, M.D: No manuscript.

4. Vanessa Parker, Ph.D.:

5. Ling Wu, Ph.D.:

There were no manuscripts by the replacement Fellows.

B. Abstracts by the Program's original six (6) Fellows*:

Crump, Sherry R., et. al.:


C. Presentations:


Anthony Kingsley, M.D., was given 10% release time as a Program Fellow, and offered presentations to internists and family physicians, on cancer and nutrition, drawing upon data he assembled with Program support. The presentations took place on site at the King-Drew Medical Center.

Tsega Habte, Pharm.Dr, provided breast health lectures to both students of the King-Drew Magnet High School of Medicine and Science, pre-baccalaureate students of the College of Allied Health, and to a group of teenagers at a community church.

It should be noted that all of the original fellows presented abstracts of their work at annual DMMCCC conferences until the discontinuation of the center.
D. Degrees obtained that were supported by this award include:

Vanessa Parker, Ph.D., was supported as a fellow for roughly twelve months before she obtained the doctorate degree. During the first year, she successfully combined her academic pursuits and Manpower Development Program’s research requirements.

E. Informatics

Dr. Ida-Jean Davis developed a breast health outreach program aimed at increasing knowledge about breast cancer prevention and control.

Four of the replacement fellows concentrated the development and evaluation of a Breast Education Program for Teens. The databases were developed to include details of anatomy and function of the breast, abnormalities of breast structure and the techniques of breast examination. Due to unforeseen problems, results from their project will be submitted within the next 60 days.

F. Applications requesting funding in support of the Fellows research based on work supported by this award are described below:

Dr. Kangman Zhu, was successful in his attempts to obtain research support through the Department of Defense:

a. An Intervention study on Screening for Breast Cancer Among Single African American Women Aged 65 and Older-DAMD17-96-1-6271
c. Methyl-deficient diets, and risk of breast cancer among African-American women*
d. Breast Cancer Training Program at Meharry Medical College* - Dr. Zhu serves as Co-investigator and Dr. Levine, one of our mentors, is Principal Investigator.

* Grant is funded by the Department of Defense.

Sherry Crump, M.D., M.P.H. received extramural funding for her project from the Agency for Health Care Policy and Research-HS07400-05.

Aaron Banks obtained an NIH Young Investigator Award that he will begin in January 2000.


Dr. Wu submitted a proposal to the Susan B Komen Foundation and is currently awaiting results.

G. There were significant achievements in the area of employment opportunities for fellows supported by this award. The following is the names and locations of our former regular Fellows who obtained professional positions during or upon leaving the Program:

1. Sherry Crump, M.D., M.P.H., is an Assistant Professor of Preventive Medicine, Morehouse School of Medicine, Atlanta, GA.

2. Mosunmola George-Taylor, Ph.D., is Associate Professor of Allied Health, School of Allied Health, Clark-Atlanta University, Atlanta, GA.

3. Tony Highshaw, M.D., is a Research Fellow, studying molecular aspects of prostate cancer, at the University of Southern California, Los Angeles, CA.

4. Vanessa Parker, Ph.D., is a new mother and not known to be currently employed, but previously has affirmed her intention to resume a career in research.

5. Ling Wu, Ph.D., is an Assistant Professor of Internal Medicine at the Meharry Medical College.

6. Kangman Zhu, M.D., M.P.H., Ph.D., is Associate Professor of Family and Preventive Medicine, Meharry Medical College, Nashville, TN.

7. Carolyn Rowley, M.S. is a research fellow at the University of California, Los Angeles, CA.

8. Anthony Kingsley, M.D., is Assistant Professor of Internal Medicine, Charles R. Drew University of Medicine & Science, Los Angeles, CA

9. Tsega Habte, Pharm.D., is Instructor for the Department of Internal Medicine, Charles R. Drew University of Medicine & Science, Los Angeles, CA. She desires to continue working in breast cancer research (See Appendix E).

10. Lori Carter was retained by Drew University as a Research Assistant.
CONCLUSIONS

Overall this grant has been of great benefit. Immediate benefits include an increase in the number of projects, publications and researchers addressing issues relevant to cancer in African-Americans, especially breast cancer. In addition, the grant laid the foundation for a funded institutional breast cancer training grant at Meharry Medical School. Obstacles toward achieving some of the objectives were related to the loss of funding for the DMMCCC because the multi-institutional structure of the award provided necessary resources and promoted discussions across institutional boundaries pertaining to breast cancer research and African-Americans.

We believe that collaborative training programs among minority institutions can expand the pool of cancer control and prevention investigators addressing issues relevant to underserved groups and can enhance breast cancer research at minority institutions. The success of such collaborations appears to be related to obtaining adequate and stable infrastructure support. Such efforts should ultimately contribute to the reduction in the overall morbidity and mortality from breast cancer among African-American females. Our experiences with this novel manpower development program encourage us to support this mechanism and similar efforts.
Appendix - A
BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2.
Photocopy this page or follow this format for each person.

NAME

AARON BANKS

POSITION TITLE

Research Fellow

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

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<td>1995-present</td>
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<td>Loyola Marymount University - Westchester, CA</td>
<td>B.S.</td>
<td>1995</td>
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RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. DO NOT EXCEED TWO PAGES.

Awards and Honors

1996 Student National Medical Association – UCLA/Drew Chapter Secretary
1995 Thomas D. Pitts Award of Biology for Academic Accomplishments at Loyola Marymount University
1995 Gertrude Rivers Robinson Award for Academic Accomplishments at Loyola Marymount University
1994 Charles R. Drew Award for Academic Accomplishments at Loyola Marymount
1993 MARC/HURT Student Representative for the site visit of Mrs. Clinton to California

Research Experience

Summer 1996 Research Fellow, Laboratory of Cardiovascular Science – Preceptor Edward Makata, M.D. NIH/NIA (National Institutes of Health/ National Institute of Aging)
Summer 1994 MARC/HURT fellow in the molecular neurobiology laboratory of John Kusiak, Ph.D., NIH/NIA. Activity of the NMDAR1 Promoter in Neuronal SHSY5Y Cell Line
6/1993-1995 Molecular Biology research in the areas of Gestational Diabetes, Sickle Cell Anemia in the laboratories of Jayduff Vadgama, P.D. and of Steven Taylor, M.D. at Charles Drew University of Medicine and Science

Publications/Abstracts:


Professional Societies

1997 – present The Loyola Marymount Scientific Society
1997 – present National Medical Association, Associate Member
1995 – 1999 Student National Medical Association
**BIOGRAPHICAL SKETCH**

Give the following information for the key personnel and consultants and collaborators. Begin with the principal investigator/program director. Photocopy this page for each person.

<table>
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<th>NAME</th>
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**EDUCATION** (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

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<td>Dillard Univ, New Orleans, LA</td>
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<td>Meharry Medical College, Nashville, TN</td>
<td>M.D.</td>
<td>1950</td>
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<td>University of Rochester, Rochester, NY</td>
<td>Fellowship</td>
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**RESEARCH AND PROFESSIONAL EXPERIENCE:** Concluding with present position, list, in chronological order, previous employment, experience, and honors. Key personnel include the principal investigator and any other individuals who participate in the scientific development or execution of the project. Key personnel typically will include all individuals with doctoral or other professional degrees, but in some projects will include individuals at the masters or baccalaureate level provided they contribute in a substantive way to the scientific development or execution of the project. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. DO NOT EXCEED TWO PAGES.

**PROFESSIONAL EXPERIENCE:**

August 1990 - Present Director, Drew/Meharry/Morehouse Consortium Cancer Center
1990 - 1994 P.I. National Black Leadership Initiative on Cancer
1990 - Present Distinguished Professor of Surgery Emeritus, MMC
Oct. 1987 - June 1990 Dean, School of Medicine
1988 - 1990 Vice-President for Health Services, Meharry/Hubbard Hospital
1973 - 1987 Professor and Chairman, Dept. of Surgery, Meharry Medical College
1974 - 1981 Associate Dean, School of Medicine, MMC
1969 - 1973 Associate Professor & Vice-Chairman, Dept. of Surgery, MMC
1959 - 1969 Private Practice of Surgery, Oklahoma City, OK
1959 - 1969 Clinical Assistant to Clinical Assistant Professor of Surgery, University of Oklahoma School of Medicine, Oklahoma City, OK
1958 - 1959 Clinical Fellow, American Cancer Society and Instructor in Surgery, MMC
1957 - 1958 Surgery Chief Resident, Hubbard Hospital
1956 - 1957 Surgery Resident, Memorial Hospital, New York, NY
1954 - 1956 Surgery Resident, Hubbard Hospital
1953 - 1954 NCI-NIH Research Fellow-University of Rochester
1951 - 1953 Active Duty, U.S.A.R.-MC
1950 - 1951 Internship Hubbard Hospital, Nashville, TN

**CERTIFICATIONS:**

1980 Recertified, American Board of Surgery
1959 Certified, American Board of Surgery

**HONORS:**

Alpha Kappa Mu (College Scholastic Honor Society)
Kappa Pi (Medical School Honor Society)
Alpha Omega Alpha (Medical School Honor Society)
B.A. Degree-Magna Cum Laude
St. George Award-American Cancer Society-1985
Louis J. Bernard Neighbor for Life Award of the TN. Division of American Cancer Society - 1992
National Humanitarian Award - American Cancer Society - 1993
SELECTED PUBLICATIONS:


Principal Investigator/Program Director (Last, first, middle):  >

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2.

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<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lori Carter</td>
<td>Research Assistant</td>
</tr>
</tbody>
</table>

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loyola Marymount University, Los Angeles, CA.</td>
<td>B.A</td>
<td>1/1996-12/1997</td>
<td>Biology</td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. DO NOT EXCEED TWO PAGES.

Long Beach Mental Health, FEMA Student Worker, May 1992 - September 1992. Performed various clerical task to maintain office organization.


Community Diagnostics Laboratory, Laboratory Assistant, September 1996 - March 1998. Performed various test on specimens collected from medical clinics.

Little People's World of Communication, Teacher, May 1, 1998 - August, 1998. Provide speech therapy for children ages 18 months to three years in an early intervention program.

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2. Photocopy this page or follow this format for each person.

NAME
Sherry R. Crump, MD, MPH

POSITION TITLE
Research Fellow

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Virginia, Charlottesville, VA</td>
<td>B.A.</td>
<td>1981-85</td>
<td>Biology</td>
</tr>
<tr>
<td>University of Virginia, Charlottesville, VA</td>
<td>M.D.</td>
<td>1985-91</td>
<td>Medicine</td>
</tr>
<tr>
<td>Carolina’s Medical Center, Charlotte, NC</td>
<td></td>
<td>1991-92</td>
<td>Internship-Pediatrics</td>
</tr>
<tr>
<td>Morehouse School of Medicine, Atlanta, GA</td>
<td></td>
<td>1992-94</td>
<td>Residency-Prev. Med.</td>
</tr>
<tr>
<td>Rollins School of Public Health, Emory, Atlanta</td>
<td>MPH</td>
<td>1992-95</td>
<td>Public Health</td>
</tr>
</tbody>
</table>

PROFESSIONAL EXPERIENCE:

1987-1988  Project Bayon-Volunteered in a hospital for indigent inhabitants of Honduras, Central America
1992-1993  Atlanta Public School for the Special Olympics Program - Volunteer Physician
1992-1994  Georgia Nurses’ Foundation Health Care for the Homeless Program - Volunteer Program
1992-Present Fulton County Health Department Teen Service Program - Staff Physician
1994-Present Drew/Meharry/Morehouse Consortium Cancer Center - Breast Cancer Prevention and Control Research Fellowship

HONORS AND MEMBERSHIPS:

Summer ‘92  Treatment and Follow-up Compliance of Atlanta Soviet Refugees - Georgia Department of Human Resources, Office of Rural Health
Spring ‘93  Emory Undergraduate Student Sexual Behavior Survey - Rollins School of Public Health Emory University
Fall ‘93  Domestic Violence Survey - Georgia Department of Human Resources, Division of Public Health, Epidemiology Branch
Spring ‘94  Gonorrhea Trends - Richardson Health Center, STD Clinic, 1990-1993, Dekalb County Board of Health, Georgia

SELECTED PUBLICATION:

**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel in the order listed on Form Page 2.

Photocopy this page or follow this format for each person.

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ida Jean Davis, BA, PA, BS, DC, PhD (c)</td>
<td>Assistant Professor of Medicine, Drew University</td>
</tr>
</tbody>
</table>

**EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)**

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of California at Riverside</td>
<td>B.A.</td>
<td>1975</td>
<td>Psychobiology</td>
</tr>
<tr>
<td>Charles R. Drew University</td>
<td>P.A.</td>
<td>1977</td>
<td>Family Medicine</td>
</tr>
<tr>
<td>Cleveland Chiropractic College</td>
<td>B.S.</td>
<td>1982</td>
<td>Human Biology</td>
</tr>
<tr>
<td>Cleveland Chiropractic College</td>
<td>D.C</td>
<td>1984</td>
<td>Chiropractic Medicine</td>
</tr>
<tr>
<td>University of Southern California</td>
<td>Ph.D.</td>
<td>pending</td>
<td>Preventive Medicine</td>
</tr>
</tbody>
</table>

**RESEARCH AND PROFESSIONAL EXPERIENCE:** Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. **DO NOT EXCEED TWO PAGES.**

1975-76 Chemistry Laboratory Assistant, Kaiser Foundation, North Hollywood, Ca
1984-85 Chiropractic Clinician, Cleveland Chiropractic College, Los Angeles, CA
1991-96 Research Assistant, USC School of Medicine, Institute of Prevention and Research, James Dwyer Ph.D., Los Angeles, CA
1995 Provider Education Consultant, Breast Cancer Early Detection Program

**Honors**

1991 NHLBI research Supplement Award
1992 NIH Prevention cardiology Academic Award
1993 TRDRP Research & Training Award
1994 NHLBI research Supplement Award

**Publications**


BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2. Photocopy this page or follow this format for each person.

NAME
Mosunmola Alaba George-Taylor

POSITION TITLE
Assistant Professor

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Lagos, Akoka, Lagos, Nigeria</td>
<td>B.S.</td>
<td>1975</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Atlanta University, Atlanta, GA</td>
<td>M.S.</td>
<td>1982</td>
<td>Physical Chemistry</td>
</tr>
<tr>
<td>Georgia Institute of Technology, Atlanta, GA</td>
<td>M.S.</td>
<td>1987</td>
<td>Atmospheric Chemistry</td>
</tr>
<tr>
<td>Clark-Atlanta University, Atlanta, GA</td>
<td>Ph.D.</td>
<td>1994</td>
<td>Biology</td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. DO NOT EXCEED TWO PAGES.

PROFESSIONAL EXPERIENCE:

1990-Present  Assistant Professor, Chemistry Department, Clark Atlanta University, Atlanta, GA
1991-1994    Research Technician, Department of Biological Sciences, Clark Atlanta University, Atlanta, GA
1993-1994    Teaching Assistant, Clark Atlanta University, Atlanta, GA
1991-1994    Biology and Chemistry Instructor, Clark Atlanta University summer programs
1992-1993    Chemistry Lab Instructor, Spelman College, Atlanta, GA
1991-1992    Science Instructor, Clark Atlanta University Weekend Programs Saturday Science Academy
1992         Instructor of Hands on Laboratory Procedures in Physical Science
1988-1990    Research Assistant, Dolphus E. Milligan Science Research Institute, Clark Atlanta University
1989         Laboratory Instructor, Chemistry Department, Clark Atlanta University, Atlanta, GA
1982-1988    Research Assistant, School of Geophysical Sciences, Georgia Institute of Technology, Atlanta, GA
1980-1982    Research Assistant, Chemistry Department, Atlanta University, Atlanta, GA
1977-1980    Chemistry Teacher, Ikeja Grammar School, Oshodi, Lagos State, Nigeria
1975-1976    Chemistry Teacher, Lagos City College, Yaba, Lagos State, Nigeria
1972         Laboratory Technician, Lagos University Teaching Hospital, Idi-Araba, Lagos State, Nigeria

HONORS AND MEMBERSHIPS:

Member of the American Society of Cell Biology (ASCB).
Member of the Federation of American Society of Experimental Biology (FASEB).
PROFESSIONAL CONFERENCES AND ACTIVITIES:

American Society of Cell Biologists Conference, San Francisco, California, 1994
American Society of Cell Biologists Conference, New Orleans, Louisiana, 1993
American Society of Cell Biologists Conference, Denver, Colorado, 1992
American Society of Cell Biologists Conference, Boston, Massachusetts, 1991
American Society of Cell Biologists Conference, San Diego, California, 1990
National MBRS (Minority Biomedical Research Symposia) Conference Atlanta, Georgia, 1993
National MBRS Conference, Nashville, Tennessee, 1990
American Chemical Society 18th Regional Meeting, Bowling Green, Ohio, 1986

Successfully completed a short course on "Remote Sensing of the Earth and Atmosphere", conducted by the Department of Continuing Education, Georgia Institute of Technology, Atlanta, GA May 13-14, 1985

Successfully completed a short course on the "Introduction of the Problems of Acid Rain", conducted by the Department of Continuing Education, Georgia Institute of Technology, Atlanta, GA November 7-10, 1984

SELECTED PUBLICATION:

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2.
Photocopy this page or follow this format for each person.

NAME: Tsega Habte, Pharm. MSc.

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Babesh Boyayi, Cluj-Napoca, Romania</td>
<td>M.Sc.</td>
<td>1975-81</td>
<td>Pharmacy</td>
</tr>
<tr>
<td>University of Southern California, Los Angeles, CA</td>
<td>M.Sc.</td>
<td>1985-86</td>
<td>Clinical Pharmacy Program</td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. DO NOT EXCEED TWO PAGES.

Memberships
- International Society of Hypertension in Blacks, 1992
- Member, Eritrean Medical Association, American Region, 1986
- Member, American Association for the Advancement of Science, 1988
- Member, Society of Gastroenterology, 1985

Supervision and Instruction of Students

Robert Lara
- Won 2nd place in the county of Los Angeles Science Fair
- Kaiser-Permanente award
- Scholarship – Connecticut - summer

Kristine Ray
- Won 3rd place in the State and 2nd place in the County of Los Angeles Science Fair

Presentations


Bright-Asare, P., Enrique, C., Habte, T., Giannikopoulos, I.: Duodenal Ulcer Induced by Infusion of Acidified Ethanol [ETOH] into the Rat Duodenal are Mediated by Altered Mucosal Permeability in the Presence of HCL.

**BIOGRAPHICAL SKETCH**

Give the following information for the key personnel and consultants listed on page 2. Begin with the Principal Investigator/Program Director. Photocopy this page for each person.

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITIONS TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margaret Kirkcaldy Hargreaves</td>
<td>Assistant Professor, Department of Medicine</td>
</tr>
</tbody>
</table>

**EDUCATION**

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>MacDonald College (McGill U), Quebec</td>
<td>B.Sc (H.Ec)</td>
<td>1959</td>
<td>Nutr. &amp; Dietetics</td>
</tr>
<tr>
<td>Royal Victoria Hosp., Montreal, Quebec</td>
<td>P.Dt.</td>
<td>1960</td>
<td>Dietetics</td>
</tr>
<tr>
<td>Univ. of California, Berkeley, CA</td>
<td>M.S.</td>
<td>1963</td>
<td>Community Nutrition</td>
</tr>
<tr>
<td>Univ. of Toronto, Toronto, Ontario</td>
<td>Ph.D.</td>
<td>1970</td>
<td>Nutrition</td>
</tr>
<tr>
<td>Concordia Univ., Montreal, Quebec</td>
<td>1977 Admin. Courses</td>
<td></td>
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</table>

**RESEARCH AND PROFESSIONAL EXPERIENCE:** Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. DO NOT EXCEED TWO PAGES.

**EXPERIENCE**

1960 - 62 Dietitian-Nutritionist, Department of Dietetics, Royal Victoria Hospital, Montreal.
1964 - 65 Research Assistant, Research Institute, Toronto Sick Children's Hospital, Toronto, Ontario.
1970 - 72 Chief, Dietetic Internship Program, Dept. of Dietetics, Montreal General Hospital, Montreal.
1972 - 75 Assistant Professor, Nutrition/Dietetics, Department of Home Economics, Mount Saint Vincent University, Halifax, Nova Scotia.
1975 - 77 Assistant Professor, Nutrition, Department of Dietetics, University of Ottawa, Ottawa, Ontario.
1981 - 86 Program Development Specialist, Office of the Academic Vice-President & Adjunct Principal Investigator, CARP, Tennessee State University; Assistant Professor, Department of Medicine/Surgery, Meharry Medical College, Nashville, Tennessee, Director, Clinical Nutrition Program.
1986 - 88 Planning Director and Nutrition Investigator, Cancer Control Research Unit, Meharry Medical College, Nashville, Tennessee.
1989 - 90 Director, Diet and Nutrition Development Program, Cancer Consortium.
1990 - 91 Director, Research Development, Institute on Health Care for the Poor and Underserved.
1990 - Assistant Professor, Department of Medicine.

**HONORS**

MacDonald College Bursary, 1957 - 59
Teaching Assistantship, University of California, Berkeley, 1962 - 63
University of Toronto Fellowships, 1965 - 67
National Research Council Scholarship, 1967 - 68
Medical Research Council Studentships, 1968 - 70

**PUBLICATIONS AND PRESENTATIONS**


Talk to Surgeons at The National Medical Association on "Nutrition Assessment". July, 1982, San Francisco, CA.


Hargreaves, M.K "Socio-cultural influences on Black American food habits from slavery until now", presented at the Conference on Afro-American Culture and History for the Nashville and Tennessee Historical Commissions, held February, Tennessee State University, Nashville, TN. 1989.


Hargreaves, M.K et al. Tectifiers for Chapters on Racial and Ethnic Minorities Settings (p. 51-63); Health Promotion Disease Prevention in Minority Settings (p.82-98); Tobacco (p. 99-103); and Cancer (p.186-190) in Healthy People 2000: Citizens Chart The Course, edited by Stoto M. et al., Institute of Medicine, National Academy Press, Washington D.C., 1990.

**BIOGRAPHICAL SKETCH**

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<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
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<tbody>
<tr>
<td>Melanie Hill</td>
<td></td>
</tr>
</tbody>
</table>

**EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)**

<table>
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<tr>
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<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of California, Berkeley, CA</td>
<td>B.A</td>
<td>1958-90</td>
<td>Economics</td>
</tr>
<tr>
<td>CSU, Dominguez Hills –Carson, Ca</td>
<td>Credentials</td>
<td>1994-97</td>
<td>Teaching</td>
</tr>
</tbody>
</table>

**RESEARCH AND PROFESSIONAL EXPERIENCE:** Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. **DO NOT EXCEED TWO PAGES.**

1993-present

*Teacher, Washington Preparatory High School, Los Angeles, CA*

*Co Chair, Math Department, 1995-1997*

*Leadership Advisor, 1996-1998*

1990-1992

*Staff Aide, Los Angeles Trade-Technical College, Los Angeles, CA*

*Managed student affairs for Contact Education Classes*
**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel in the order listed on Form Page 2. Photocopy this page or follow this format for each person.

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ralph Highshaw</td>
<td>Research Fellow</td>
</tr>
</tbody>
</table>

**EDUCATION/TRAINING** (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

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<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>USC/LAC Medical Center - Los Angeles, CA</td>
<td></td>
<td>1993-1996</td>
<td>Surgical resident</td>
</tr>
<tr>
<td>University of Southern California, CA</td>
<td>M.D</td>
<td>1988-1993</td>
<td></td>
</tr>
<tr>
<td>Loyola Marymount University, Westchester, CA</td>
<td>B.S.</td>
<td>1979-1983</td>
<td>Biology</td>
</tr>
</tbody>
</table>

**RESEARCH AND PROFESSIONAL EXPERIENCE:** Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. **DO NOT EXCEED TWO PAGES.**

> Academic Awards and Honors

  Medical School - Honors: Pediatrics, General Surgery

  Undergraduate - Member of Sigma Xi National research Honor Society 1987-1989
  Black Student Association Award for Academics
**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel in the order listed on Form Page 2. Photocopy this page or follow this format for each person.

<table>
<thead>
<tr>
<th>NAME</th>
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<tbody>
<tr>
<td>Todd Huffman</td>
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</tr>
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</table>

**EDUCATION/TRAINING** (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
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<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern University, Baton Rouge, LA</td>
<td>B.A.</td>
<td>1984-87</td>
<td>Political Science</td>
</tr>
<tr>
<td>Southen University Law Center</td>
<td>Juris Doctor</td>
<td>1987-90</td>
<td></td>
</tr>
</tbody>
</table>

**RESEARCH AND PROFESSIONAL EXPERIENCE:** Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. **DO NOT EXCEED TWO PAGES.**

- **1997-present** Encourage minority women to enhance their quality of life through better nutrition and health care.
- **1995-1997** worked with Volunteers of America developing a program to help foster the relationship between health service providers and residents of housing projects.
- **1992-94** Judicial Law clerk
  - Louisiana State Court, Gretna, LA
- **1990 summer** Participant in Operation Crossroads Africa, Freetown, Sierra Leone. Helped develop water treatment center which helped residents combat water borne illnesses.
- **1990-91** Substitute Teacher
  - East Baton Rouge Parish Schools, Baton Rouge, LA
BIOGRAFIICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2.
Photocopy this page or follow this format for each person.

NAME
Anthony Kingley, MD

POSITION TITLE
Assistant Professor of Medicine, Drew University

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rutgers, The State University of New Jersey, New Brunswick, New Jersey</td>
<td>B.S.</td>
<td>1982-85</td>
<td>Biochemistry</td>
</tr>
<tr>
<td>Robert Wood Johnson Medical School University of Medicine and Dentistry of New Jersey, Piscataway, New Jersey</td>
<td>M.D.</td>
<td>1987-92</td>
<td>Medicine</td>
</tr>
<tr>
<td>University of Medicine and Dentistry of New Jersey New Jersey Medical School, Hackensack Program, Hackensack, New Jersey</td>
<td>Internal Medicine</td>
<td>1993-96</td>
<td></td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. DO NOT EXCEED TWO PAGES.

1998-present Faculty, Division of Geriatrics, Drew University
1997-98 Geriatrics fellowship, Drew University, Los Angels, CA
1997 Board Certifications: Internal Medicine

Honors and Awards
Recipient – Rutgers Alumni Academic Scholarship – Nominee
President - East Coast Biochem Society
Recipient – New Jersey Medical Society Scholarship Award
President – Student National Medical Association – Camden

Publications

Abstracts
BIOGRAPHICAL SKETCH

Give the following information for the key personnel and consultants and collaborators. Begin with the principal investigator/program director. Photocopy this page for each person.

NAME
Robert S. Levine

POSITION TITLE
Co-Investigator

EDUCATION
(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR CONFERRED</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowman Gray, Winston-Salem, NC</td>
<td>M.D.</td>
<td>1968</td>
<td>Medicine</td>
</tr>
<tr>
<td>Bowman Gray, Winston-Salem, NC</td>
<td>Intern</td>
<td>1969</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>University of Kentucky, Lexington, KY</td>
<td>Resident</td>
<td>1972</td>
<td>Preventive Medicine</td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Key personnel include the principal investigator and any other individuals who participate in the scientific development or execution of the project. Key personnel typically will include all individuals with doctoral or other professional degrees, but in some projects will include individuals at the masters or baccalaureate level provided they contribute in a substantive way to the scientific development or execution of the project. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. DO NOT EXCEED TWO PAGES.

Employment:
1972-74 Preventive Medicine Officer, Fort Hood, TX
1974-76 Physician II, Dade Co. Health Dept., Miami, FL
1976-88 Asst.-Associate Professor and Vice Chairman, Dept. of Epidemiology and Public Health, University of Miami, School of Medicine, Miami, FL
1986-88 Director of Epidemiology and Biostatistics, Nassau Co. Dept. of Health, Mineola, NY
1988-91 Director of Community and Preventive Medicine, Our Lady of Mercy Medical Center, Bronx, NY
1991 Associate Medical Director, Quality Assurance, Kings Co. Hospital Center, Brooklyn, NY
1992-Present Professor, Department of Family and Preventive Medicine, Meharry Medical College, Nashville, TN
1993-Present Principal Investigator, MEDTEP Research Center, Associate Director for Research, Institute on Health Care for the Poor and Underserved, Chair, Editorial Board of Journal of Health Care for the Poor and Underserved, Meharry Medical College, Interim Chair, Department of Family and Preventive Medicine, Meharry Medical College, Nashville, TN

Honors and Awards:
1972 Army Commendation Medal
1975 Fellow, American College of Preventive Medicine
1989 Member, American College of Epidemiology

Publications: (1990-Present)
Biographical Sketch: Robert S. Levine, M.D. (Page 2)


Abstracts and Presentations (*Presented): 1990 to Present


BIOGRAPHICAL SKETCH

Give the following information for the key personnel and consultants and collaborators. Begin with the principal investigator/program director. Photocopy this page for each person.

NAME: PATRICIA MATTHEWS-JUAREZ, Ph.D.
POSITION TITLE: ADMINISTRATOR

EDUCATION (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR CONFERRED</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fisk University, Nashville, Tn.</td>
<td>BA</td>
<td>1965-69</td>
<td>Psychology</td>
</tr>
<tr>
<td>N.Y. University, N.Y.</td>
<td>MSW</td>
<td>1969-71</td>
<td>Community Org.</td>
</tr>
<tr>
<td>Brandeis University, Waltham, MA</td>
<td>Ph.D.</td>
<td>1979-82</td>
<td>Social Policy</td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Key personnel include the principal investigator and any other individuals who participate in the scientific development or execution of the project. Key personnel typically will include all individuals with doctoral or other professional degrees, but in some projects will include individuals at the masters or baccalaureate level provided they contribute in a substantive way to the scientific development or execution of the project. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. DO NOT EXCEED TWO PAGES.

RESEARCH AND PROFESSIONAL EXPERIENCE

1976-1977 Director, Social Welfare Policy Program
Department of Sociology
Hampton University, Hampton, Virginia

1977-1979 Assistant Professor, Graduate School of Social Work
Norfolk State University, Norfolk, Virginia

1981-1983 Director of Black Outreach Services
Worcester Youth Guidance Center, Worcester, Massachusetts

1983-1984 Director of Outpatient and Inpatient Services
Central City Community Mental Health Center
Los Angeles, California

1984-1988 Associate Director for Administration, Department of Family Medicine
Charles R. Drew University of Medicine & Science
Los Angeles, California

1985-Present Assistant Professor
Department of Family Medicine
Charles R. Drew University of Medicine & Science
Los Angeles, California

1988-Present Administrator, Drew Meharry Morehouse Consortium Cancer Center
Charles R. Drew University of Medicine & Science
COMMITTEES:

1985-Present  Member, University Faculty Council
1989-Present  Federal Reviewer, Division of Medicine, HRSA
1989-Present  Federal Reviewer, Federal Office of Minority Health
1990-1991    Federal Reviewer, Federal Office of Rural Health Policy
1990- Present Co Chair, Board of Visitors, Federal Office of Rural Health
1990-1992    Planning Committee, Biannual Symposium of Cancer in Minority Population, M.D. Anderson Cancer Center, Dr. Lovell Jones, Organizer
1991-Present  Member, State Office of Manpower Planning and Development Policy Committee
**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel in the order listed on Form Page 2. Photocopy this page or follow this format for each person.

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vanessa C. Parker</td>
<td>Department of Preventive Medicine</td>
</tr>
</tbody>
</table>

**EDUCATION/TRAINING** (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of California - Sand Diego, San Diego, CA</td>
<td>B.S.</td>
<td>1982</td>
<td>Microbiology</td>
</tr>
<tr>
<td>California State University, Dominguez Hills, CA</td>
<td>M.A.</td>
<td>1989</td>
<td>Behavioral Sciences</td>
</tr>
<tr>
<td>University of Southern California</td>
<td>Ph.D.</td>
<td>1995</td>
<td>Preventive Medicine</td>
</tr>
</tbody>
</table>

**RESEARCH AND PROFESSIONAL EXPERIENCE:** Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. **DO NOT EXCEED TWO PAGES.**

**PROFESSIONAL EXPERIENCE:**

11/93-Present Graduate Research Assistant, Drug Use and HIV-Risk Sexual Behaviors in Homeless Youth, Childrens Hospital Los Angeles, Division of Adolescent Medicine  
07/93-Present Co-Principal Investigator, Adolescent Condom-Use Efficacy Among Urban Minorities, Charles R. Drew University of Medicine and Science  
05/93-12/93 Project Manager, Gang Violence Prevention and Suppression Project, High-Risk Youth Project, Childrens Hospital-Division of Adolescent Medicine  
06/92-12/93 Graduate Research Assistant, KCET/USC African American Smoking Prevention Project, University of Southern California  
06/92-10/93 Sr. Research Associate, Women & HIV/AIDS Research Project, Charles R. Drew University of Medicine and Science  
09/91-06/92 Graduate Research Assistant, Day One Community Partnership, University of Southern California  
09/90-06/92 Program Manager, Tobacco Control Program, King-Drew Medical Center, Los Angeles, California  
12/88-01/91 Staff Research Associate, California Heterosexual Partner' Study, University of California, San Francisco  
10/88-11/89 Program Manager, People Who Care Youth Center AIDS Education Project, Los Angeles, California  
02/88-11/88 Medical Assistant Instructor, Watterson Career College, Los Angeles, California  
05/88-09/88 Peer Ethnographic Interviewer, California State University, Long Beach, AIDS Education and Prevention Project, Long Beach, California  
08/87-08/88 Minority Aids Educator, Long Beach Health Department, Aids Education and Prevention Project, Long Beach, California  
06/86-09/87 Research Assistant, Cancer Research Consortium, Charles R. Drew University of Medicine and Science, Los Angeles, California  
HONORS AND MEMBERSHIPS:

Distinguished Young Women of America, 1987
Certificate of Appreciation, County of Los Angeles, Department of Health Services, Sexually Transmitted Disease Program, November 1989
Certificate of Appreciation, Los Angeles Southwest College Women's Center, October 1989
Certificate of Appreciation, County of Los Angeles, Department of Health Services, Sexually Transmitted Disease Program

SELECTED PUBLICATIONS:

5. Parker V., Sussman, S., "Cigarette Smoking Among Family and Friends of Urban African American Youth" (Under Review)
7. Parker, V., Montgomery, S., Kipke, M., O'Guynn, S., "Longitudinal Follow-up of Urban Homeless/Runaway Youth: Methodology" (In Preparation)
8. Parker, V., Ashley, M., Montgomery, S., "Sexual and Condom Use Behaviors Among African American Adolescents Living In An Inner-City Public Housing Development" (In Preparation)
BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2. Photocopy this page or follow this format for each person.

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linda Lue Pederson</td>
<td>Professor, Department of Epidemiology &amp; Biostatistics</td>
</tr>
</tbody>
</table>

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown University</td>
<td>B.A.</td>
<td>1964</td>
<td>Psychology</td>
</tr>
<tr>
<td>University of Iowa</td>
<td>M.A.</td>
<td>1966</td>
<td>Child Behavior</td>
</tr>
<tr>
<td>University Western Ontario</td>
<td>Ph.D.</td>
<td>1980</td>
<td>Epidemiology &amp; Biostatistics</td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. DO NOT EXCEED TWO PAGES.

PROFESSIONAL EXPERIENCE:

1994-Present Clinical Professor, Community Health & Preventive Medicine, Morehouse School of Medicine, Atlanta, GA
1994-1995 Professor, Epidemiology & Biostatistics, University of Western Ontario
1986-1991 Associate Director, Health Care Research Unit, University of Western Ontario
1984-1993 Associate Professor, Medicine, University of Western Ontario
1984-1994 Associate Professor, Epidemiology & Biostatistics, University of Western Ontario
1980-1984 Assistant Professor, Epidemiology & Biostatistics, University of Western Ontario
1980-1984 Assistant Professor, Medicine, University of Western Ontario
1979-1980 Research Associate, Medicine, Victoria Hospital/University of Western Ontario
Winter 78 Teaching Assistant, Biostatistics II, Epidemiology & Preventive Medicine, University of Western Ontario
Fall 78 Teaching Assistant, Biostatistics I, Epidemiology & Preventive Medicine, University of Western Ontario
1973-1976 Research Assistant, Medicine, University of Western Ontario
Programmer Coordinator, Smoking Withdrawal Program, Victoria Hospital
Research Assistant, London Board of Education
1968-1975 Grader, Introductory Psychology Course, Psychology, Correspondence Division, University of Western Ontario
1968-1973 Consultant, Psychology, University of Western Ontario
1968-1973 Teaching Developmental Psychology, Extension & Summer School, University of Western Ontario
1964-1966 Research Assistant, Institute of Child Behavior & Development, University of Iowa
1963-1964 National Science Foundation Undergraduate Research Fellowship, Psychology, Brown University

HONORS AND MEMBERSHIPS:
Fellow, American College of Epidemiology, 1986
Member, Centre for Activity and Ageing, Lawson Research Institute of the St. Joseph's Health Centre and University of Western Ontario, 1993
Associate Member, Centre for Health Promotion, Banting Institute, University of Toronto, 1993-95
Steering Committee, "Working women's work-related health concerns survey", Industrial Disease Standards Panel, 1993
Board of Directors, Canadian Society for Epidemiology and Biostatistics, 1993
Reviewer, University of Toronto Press, 1992
Member, Advisory Board, Annals on Addiction; Journal published by the Publications Service of the University of Granada (Spain), 1992
Member, Editorial Board, Health Values, 1992
Advisory Board, Outcome Research for Independent Health Facilities, College of Physicians & Surgeons of Ontario, 1992
Advisory Board, Canadian Consensus on Physicians Intervention in Smoking Cessation, 1991
Member, Selection Committee for Chair, Department of Epidemiology & Biostatistics, University of Western Ontario, 1991
Member, Health Care Systems Review Committee, panel A., Ontario-Ministry of Health, 1991-93
Coordinator, Department of Epidemiology & Biostatistics Seminar Services, 1990
Member-at-large, national Cancer Institute of Canada, 1990-98
Member, Ontario Health promotion Researchers and Practitioners Network Project Meeting, Ontario Prevention Clearinghouse Advisory Committee, June 4, 1990
Host, Ontario Health Promotion Researchers and Practitioners Workshop, Ontario prevention Clearinghouse, May 3, 1990
Member, Workshop on Health Promotion Research, Ontario Prevention Clearinghouse Advisory Committee, 1990
Member, Editorial Board, Women and health, 1989

SELECTED PUBLICATIONS:
BIOGRAPHICAL SKETCH

NAME | POSITION TITLE
--- | ---
SUSAN ROBINSON, MD, MPH | PHYSICIAN

EDUCATION (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR CONFERRED</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dillard University; New Orleans, LA</td>
<td>BS</td>
<td>1985</td>
<td>Chemistry</td>
</tr>
<tr>
<td>University of Pittsburgh; Pittsburgh, PA</td>
<td>M.D.</td>
<td>1990</td>
<td>Medicine</td>
</tr>
<tr>
<td>Loma Linda Uni. School of Public Health; Loma Linda CA</td>
<td>M.P.H</td>
<td>1993</td>
<td>Occupational/Epidemiology</td>
</tr>
<tr>
<td>Loma Linda University Medical Center; Loma Linda, CA</td>
<td>Residency</td>
<td>1993</td>
<td>Preventive Medicine</td>
</tr>
<tr>
<td>Drew University School of Medicine; Los Angeles, CA</td>
<td>Fellowship</td>
<td>1994</td>
<td>Cancer Prevention Research</td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Key personnel include the principal investigator and any other individuals who participate in the scientific development or execution of the project. Key personnel typically will include all individuals with doctoral or other professional degrees but in some projects will include individuals at the masters or baccalaureate level provided they contribute in a substantive way to the scientific development or execution of the project. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. DO NOT EXCEED TWO PAGES.

PROFESSIONAL EXPERIENCE

1993-present | Assistant Professor in Department of Internal Medicine at Charles R. Drew University

RESEARCH EXPERIENCE

1991-1993 | Research Associate, "Bupropion as an Adjunct to Smoking Cessation" Principal Investigator, Lindy Ferry M.D., M.P.H., Loma Linda University Medical Center
1992-1994 | Research Associate, "Dopamine Receptors in Nicotine Addiction", Principal Investigator, David Comings, M.D., City of Hope Medical Center
1995-1996 | Co-Investigator, "Cancer Prevention and Control in Underserved Populations", Principal Investigator Mary Ashley RN, Drew University
1995-1997 | Co-Investigator, "Cancer Fatigue and Quality of Life," Principal Investigator, Marcia Grant Ph.D., City of Hope Medical Center
1998-present | Co-Principal Investigator, "Cancer Prevention and Control Manpower Development", Principal Investigator, Samuel Shacks, Ph.D., M.D., Drew University
1997-2000 | Principal Investigator, "Using Breast Cancer Survivors to Increase Mammography Use", Department of Defense

PUBLICATIONS


PRESENTATIONS

1997  Advances in Smoking Cessation, Asian-American Medical Association in Los Angeles, CA
1997  Prostate Cancer Screening at American Association Cancer Research in San Diego on April 12-16, 1997
1997  *Prostate cancer* Grace United Methodist Church in Los Angeles
1996  *Recruitment strategies for African-Americans* Cancer Prevention and Control Research Workshop sponsored by The Jonsson Comprehensive Cancer Center at UCLA.
1995  *Reducing breast cancer mortality in women* Sixth annual Women's conference at Lynwood's City of Hall.
1994  *Prostate cancer in African-Americans* 22nd Annual Training Conference for The California Association of Black Correctional Workers

HONORS

1994  Young Investigator Award in Nicotine Addiction award by American Society of Addiction Medicine

SOCIETIES

1993-1995  Delegate, California Medical Association
1994-present  Board Member, Encore Plus Program
1994-present  Young Physician Section, California Academy of Preventive Medicine
1994-present  Program Coordinator, American College of Preventive Medicine
1996-present  Board Member, American Cancer Society-South Central Los Angeles Unit
Shacks, Samuel J.

BIOGRAphICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2. Photocopy this page or follow this format for each person.

NAME
Carolyn Rowley

POSITION TITLE
Post-doctoral Fellow

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include post doctoral training)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (If applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loyola Marymount University, California</td>
<td>B.A.</td>
<td>1983</td>
<td>Psychology</td>
</tr>
<tr>
<td>Loyola Marymount University, California</td>
<td>M.A.</td>
<td>1988</td>
<td>Counseling Psychology</td>
</tr>
<tr>
<td>Southern Illinois University at Carbondale, Illinois</td>
<td>M.A.</td>
<td>1990</td>
<td>Clinical Psychology</td>
</tr>
<tr>
<td>Southern Illinois University at Carbondale, Illinois</td>
<td>Ph.D.</td>
<td>In Progress</td>
<td>Clinical Psychology</td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list in chronological order, previous employment, experiences, and honors. Include present membership in any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. DO NOT EXCEED TWO PAGES.

PROFESSIONAL EXPERIENCE:

8/88 - 5/89 Teaching Assistant, Southern Illinois University at Carbondale: Carbondale, Illinois
8/90 - 8/91 Undergraduate Psychology Advisor, Southern Illinois University at Carbondale: Carbondale, Illinois
9/91 - 5/92 Director of Psychology Undergraduate Studies/Psychology Instructor, Southern Illinois University at Carbondale: Carbondale, Illinois
9/93 - 8/94 Pre-doctoral Internship, University of Louisville School of Medicine: Louisville, Kentucky
9/94 - 11/95 Associate Psychologist, Wayne and Associates: Louisville, Kentucky
1/96 - 5/97 Consulting Psychologist/Independent Contractor: Beverly Hills, California
6/97 - Present Post-doctoral Research Fellow, Department of Research Training and the Drew component of the Drew-Meharry-Morehouse Consortium Cancer Center: Los Angeles, California

RESEARCH EXPERIENCE:

Sickle Cell Anemia
Infant Neurodevelopment and language acquisition
Deviant sexual behavior and group therapy

HONORS:

Psi Chi Honor Society: Loyola Marymount University, Los Angeles, California (1983)
PAPER/POSTER PRESENTATIONS:

Rowley, C. (March, 1997). Sickle Cell Disease Research Foundation, Los Angeles, California
"Emotional Stress/Coping Strategies for Parents"

"Strategies for Coping with Emotional Stress and Sickle Cell Disease"

Preservice microteaching for TAs. Video presented at Association of Teacher Educators
73rd Annual Meeting, Los Angeles, California

A study of children and adolescents with sickle cell anemia. Poster presented at the
Third Florida Conference on Child Health Psychology, Gainesville, Florida

ill children: A study of children and adolescents with sickle cell anemia. Paper
presented at the Midwest Psychological Association, Chicago, Illinois

PROFESSIONAL ORGANIZATIONS:

Student Member, American Association of Suicidology
Student Member, American Psychological Association
American Psychological Association of Graduate Students
Student Member, American Psychological Association, Section 1, Division 12
Student Member, Association of Black Psychologist
Psi Chi Honor Society
Sigma Xi, The Scientific Research Society
Society of Pediatric Psychology
BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2. Photocopy this page or follow this format for each person.

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
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</thead>
<tbody>
<tr>
<td>Mary Regina Saunders</td>
<td></td>
</tr>
</tbody>
</table>

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
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<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvard University</td>
<td>Ed.M</td>
<td>1995</td>
<td>Risk &amp; Prevention Program</td>
</tr>
<tr>
<td>University of California, Berkeley</td>
<td>A.B</td>
<td>1993</td>
<td>Medical Anthropology</td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. DO NOT EXCEED TWO PAGES.

Research Experiences

National Institute of Allergy and Infectious Diseases; Multicenter Study of the Pediatric AIDS Clinical Trials Group, Division of Aids, NIAID, and NIH: University of California, Los Angeles School of Medicine 1998-99. Department of Pediatric Infectious Diseases, Maternal and Child Immunology Clinic, Clinical AIDS research and Education: medical Chart Abstraction of HIV Infected Pregnant Women and their infants Receiving Care or Consultation at Study Sites.

Human Health and the Global Environment Research Training Program for Medical Students: Harvard School of Public Health, Harvard Medical School/Birmingham and Women’s Hospital, Channing Laboratory 1997-98. Division of research and Epidemiology: biological markers of lead exposure and internal dose as predictors of disease among men, women, and children; genotyping assays to determine if certain genetic polymorphisms confer susceptibility to lead toxicity; epidemiological and bench research looking at lead and other metals as widespread pollutants playing major roles in the etiology of certain chronic diseases, diminished IQ, growth, and other undesirable outcomes; cancer immunology; and infectious disease investigation.


Honors

University of California Los Angeles School of Medicine/ Charles R. Drew University of Medicine and Science:

United American Healthcare Foundation Medical Scholarship, 1999-2000
National Medical Fellowship 1995-96, 1996-97
University of California Los Angeles graduate Student Association, Community Service Commissioner, 1997
Center for Disease Control, Epidemiology and Vaccine Preventable Diseases Division, Certificate of Merit, 1996
BIOGRAPHICAL SKETCH

Give the following information for the key personnel and consultants and collaborators. Begin with the principal investigator/program director. Photocopy this page for each person.

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
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<tbody>
<tr>
<td>Kofi Alavi Semenya</td>
<td>ASSOCIATE DIRECTOR</td>
</tr>
</tbody>
</table>

EDUCATION (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR CONFERRED</th>
<th>FIELD OF STUDY</th>
</tr>
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<tbody>
<tr>
<td>University of Ghana, Legon, Ghana</td>
<td>B.S.</td>
<td>1971</td>
<td>Math &amp; Physics</td>
</tr>
<tr>
<td>University of Ghana, Legon, Ghana</td>
<td>M.S.</td>
<td>1974</td>
<td>Statistics &amp; Demographics</td>
</tr>
<tr>
<td>University of North Carolina</td>
<td>Ph.D</td>
<td>1980</td>
<td>Biostatistics</td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list in chronological order, previous employment, experience, and honors. Key personnel include the principal investigator and any other individuals who participate in the scientific development or execution of the project. Key personnel typically will include all individuals with doctoral or other professional degrees, but in some projects will include individuals at the masters or baccalaureate level provided they contribute in a substantive way to the scientific development or execution of the project. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and representative earlier publications pertinent to this application. DO NOT EXCEED TWO PAGES.

1980 - 1982 Assistant Professor of Biostatistics, Meharry Medical College, School of Medicine

1982 - 1986 Consultant in Biostatistics and Part-time Faculty Member, Meharry Medical College, SOM

1982 - 1986 Assistant Professor of Statistics, Department of Physics, Mathematics and Computer Science, Tennessee State University, Nashville, TN

1987 - Present Associate Professor of Biostatistics, Cancer Control Research Unit and Department of Preventive and Community Dentistry, Meharry Medical College, Nashville, TN

HONORS AND MEMBERSHIPS

- Sigma Xi Scientific Society
- American Statistical Association
- Biometric Society
- Population Association of America

PUBLICATIONS


NAME  
Samuel J. Shacks, Ph.D., M.D.

POSITION TITLE  
Associate Professor

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arkansas State AM&amp;N College, Pine Bluff, Ark.</td>
<td>B.S.</td>
<td>1960</td>
<td>Biology/Chemistry</td>
</tr>
<tr>
<td>University of California, Irvine, CA</td>
<td>Ph.D.</td>
<td>1972</td>
<td>Biology</td>
</tr>
<tr>
<td>University of California, Irvine, CA</td>
<td>M.D.</td>
<td>1977</td>
<td>Medicine</td>
</tr>
<tr>
<td>Harbor/UCLA Medical Center, Torrance, CA</td>
<td>Fellowship</td>
<td>1981-1983</td>
<td>Immunology/Allergy</td>
</tr>
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RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. DO NOT EXCEED TWO PAGES.

Appointments/Positions:
1972-1973 Research Fellow, Medicine, Robert B. Brigham Hospital, Harvard Medical School, Boston, Massachusetts.
1973-1974 Research Fellow in Immunology, Department of Microbiology and Immunology, University of California, Los Angeles, School of Medicine.
1977-1980 Pediatrics Residency, Martin Luther King, Jr. General Hospital, Los Angeles, California.
1980-1992 Assistant Professor, Charles R. Drew University of Medicine and Science, Martin Luther King, Jr., General Hospital, Department of Pediatrics, Los Angeles, California.
1981-1983 MARC Faculty Fellowship in Pediatric Immunology, Division of Immunology and Allergy, Harbor-UCLA Medical Center, Torrance, California.
1991-Present Chief, Pediatric Immunology/Rheumatology, Department of Pediatrics, King/Drew Medical Center, Los Angeles, California.
1992-1995 Associate Professor I, Charles R. Drew University of Medicine and Science, Martin Luther King, Jr., General Hospital, Department of Pediatrics, Los Angeles, California.
1995-Present Associate Professor II, Charles R. Drew University of Medicine and Science, Martin Luther King, Jr., General Hospital, Department of Pediatrics, Los Angeles, California.

Experiences:
1984-1997 Director, MARC Program, Charles R. Drew University of Medicine & Science, Los Angeles, California.
1984-Present Director, MBRS Program, Charles R. Drew University of Medicine & Science, Los Angeles, California.
1987-1992 Associate Dean for Research, Charles R. Drew University of Medicine and Science, Los Angeles, California.
1987-Present Association of Minority Health Professions Schools (AMHPS), Washington, D.C.
1987-1992 Liaison/Coordinator for AMHPS/NIH Initiatives, National Cancer Institute, National Institutes of Health, Bethesda, Maryland.
1987-Present Liaison Officer, Department of Defense, National Association for Equal Opportunity in Higher Education, Washington, D.C.
1989 Their Committee: State of the Nation's Health Research Facilities Infrastructure, National Academy of Science, Washington, D.C.
1990-1997 Consumer Representative, Immunology Devices Panel Food & Drug Administration, Rockville, MD.
1990-1991 Member, Sickle Cell Disease Task Force for the National Health, Lung, and Blood Institute (NHLBI)
National Institutes of Health, Bethesda, Maryland.
1990-1991 Partnership Member, NSF-Alliances for Minority Participation Program, California State University
Dominguez Hills, Los Angeles, California (Planning Grant).
1990-Present Member, Health Technology Study Section, Agency for Health Care Policy and Research/
DHHS/PHS, Rockville, Maryland.

Honors:
1989 Chair, Research Group, Association of Minority Health Professions Schools, Washington, D.C.

Publications:
During the Development of Chemically Induced Tumors: Role of (BRMS). Immunobiol. 167, 1984.
Allergy and Immunology. Vol. 3 #4, 1989.
16. Taylor, S.C., Shacks, S.J., Mitchell, Ralph, and Banks, Aaron: Serum Interleukin-6 Levels in the Steady State of
18. Taylor, S.C., Shacks, S.J., Zengwei, Qu, and Wiley. Paul: Type 2 Cytosine Serum Levels in Healthy Sickle
19. S.Taylor, S. Shacks, Z. Qu, and V. Colaco: In vitro suppression of the normal mitogenic T Lymphocyte
**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel in the order listed on Form Page 2. Photocopy this page or follow this format for each person.

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beverly D. Taylor, MD</td>
<td>Associate Professor &amp; Residency Director</td>
</tr>
</tbody>
</table>

**EDUCATION/TRAINING** (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
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<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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<tr>
<td>Fisk University, Nashville, TN</td>
<td>B.A.</td>
<td>1972</td>
<td>Biology</td>
</tr>
<tr>
<td>Meharry Medical College, Nashville, TN</td>
<td>M.D.</td>
<td>1976</td>
<td>Medicine</td>
</tr>
</tbody>
</table>

**RESEARCH AND PROFESSIONAL EXPERIENCE:** Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. DO NOT EXCEED TWO PAGES.

**PROFESSIONAL EXPERIENCE:**

1986  
Associate Professor, Clinical Community Health/Preventive Medicine, Department of Community Health/Preventive Medicine, Morehouse School of Medicine, Atlanta, GA.

1986  
Director, Public Health/Preventive Medicine Residency Program, Department of CH/PM, Morehouse School of Medicine, Atlanta, GA.

1985  
Director Undergraduate Medical Education, Family Medicine Clerkship, Department of CH/FP, Morehouse School of Medicine, Atlanta, GA.

1984-85  
Assistant Professor, Department of CH/FP, Morehouse School of Medicine, Atlanta, GA.

1983-84  
Part-time association with Med First Centers, Atlanta, GA.

1983-84  
Part-time association with Med First Centers, Atlanta, GA.

1981-82  
Private Practice, Birmingham, Alabama.

1981  
Assistant Professor - Department of Family Medicine and Community Medicine, Meharry Medical College, Nashville, TN.

1980  
Instructor - Joint appointments in Department of Family Medicine and Community Medicine, Meharry Medical College and Tennessee Department of Public Health, Mid-Cumberland Region.

1979-80  
Chief Resident, Family Medicine Residency Program, Meharry Medical College.

1976-80  
Resident-Family Medicine & Preventive Medicine Residency Program, George Hubbard Hospital, Nashville, TN.

1972-74  
Counselor/Teacher - Biology - Upward Bound Program, Fisk University, Nashville, TN.

**SELECTED PUBLICATIONS:**


9. Blumenthal DS, and Taylor BD. "If I Ran the Zoo", an example of required ambulatory clerkships in the senior year. Presented at the Society of Teachers in Family Medicine, Spring Conference, April 1, 1985, Atlanta, Georgia.

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2.
Photocopy this page or follow this format for each person.

NAME

Ling Y. Wu

POSITION TITLE

Assistant Professor

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
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<tr>
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<th>DEGREE</th>
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<th>FIELD OF STUDY</th>
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<tr>
<td>East China Normal University, Shanghai, China</td>
<td>Pre-university program</td>
<td>1974-76</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Shanghai medical University, Shanghai, China</td>
<td>B.M., M.D.</td>
<td>1977-83</td>
<td>Medicine</td>
</tr>
<tr>
<td>University of California, Berkeley, CA</td>
<td>M.P.H</td>
<td>1991-92</td>
<td>Maternal and Child Health</td>
</tr>
<tr>
<td>John Hopkins University (JHU), Baltimore, MD</td>
<td>Ph.D.</td>
<td>1992-95</td>
<td>Reproductive Epidemiology</td>
</tr>
</tbody>
</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. DO NOT EXCEED TWO PAGES.

10/1997 – Present
Assistant Professor
Internal Medicine, Meharry Medical College, Nashville, TN

8/1996 – Present
Epidemiologist & Cancer Control Research Unit, Meharry Medical College, Nashville, TN

1992 – 1996
Research Assistant
JHU School of Hygiene and Public Health, Baltimore, MD

1995 Summer
Project Designer
Family Health International, Epidemiology Division, Triangle Park, NC

1992 Summer
Visiting Physician
Family Planning Clinic of Grady Hospital, Atlanta GA

1983-1991
Physician Director
Shanghai Public Health Center, Shanghai, China

1976-1978
Mathematics Teacher
Local High School

Peer-Reviewed Publications Pertinent to this Application

Relevant Research Projects During the Last 5 Years
1. Year 1997
Funding Source: US Army Medical Research Acquisition Activity “Cancer Prevention and Control Research Manpower Development” funding new investigators and researchers in breast and cervical research. Role on project: Everything, from data collection to paper writing.

2. Year 1996
Title: Cancer rate Differentials Between Blacks and Whites of Three Metropolitan Areas: A ten Year comparison.
Funding Source: As above Role on Project: As Above.
BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2.
Photocopy this page or follow this format for each person.

NAME

Kangmin Zhu

EDUCATION/TRAINING (begin with bachelor's or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
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<tbody>
<tr>
<td>Univ. of Washington, Seattle, WA</td>
<td>Ph.D.</td>
<td>1994</td>
<td>Epidemiology</td>
</tr>
<tr>
<td>Tongji Medical Univ., Wuhan, PRC</td>
<td>MPH</td>
<td>1985</td>
<td>Epidemiology</td>
</tr>
<tr>
<td>Tongji Medical Univ., Wuhan, PRC</td>
<td>M.D.</td>
<td>1982</td>
<td>Medicine</td>
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</table>

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. DO NOT EXCEED TWO PAGES.

Professional Experience

Associate professor, Department of Occupational and Preventive Medicine, School of Medicine, Meharry Medical College, Nashville, TN, 1998-present.

Assistant professor, Department of Family and Preventive Medicine, School of Medicine, Meharry Medical College, Nashville, TN, 1994-1998 and Research fellow, Drew-Meharry-Morehouse Consortium Cancer Center, 1994-1997.


Research Assistant, Children's Hospital and Medical Center, Seattle, WA, 1990-1991.

Research Assistant, Department of Epidemiology, University of Washington, Seattle, WA, 1989-1990.

Lecturer, Department of Epidemiology, Tongji Medical University, Wuhan, PRC, 1987-1988.

Teaching Assistant, Department of Epidemiology, Tongji Medical University, Wuhan, PRC, 1985-1987.

Publications:

5. Zhu K, He S, Pan X. The logistic regression analysis of urinary cations in relation to blood


Published Abstracts


Appendix - B
Recent Trends in Breast Cancer Incidence

Ling Wu¹, MD, PhD, Margaret Hargreaves², PhD, Kofi Semenya³, PhD

Abstract

Purpose: The purpose of this study is to examine and compare the recent trend in breast cancer incidence among white and black women in the state of Tennessee between 1989 and 1998.

Methods: Breast cancer incidence data were collected in Tennessee between 1989 and 1998. Breast cancer cases were reported from all Tennessee hospitals to the Tennessee Cancer Reporting System which is a program of the State Department of Health. Population data were also provided by the Office of Health Statistics of the State Department of Health. Breast cancer incidence rates were calculated by age and race (white and black) for each year from 1989 through 1998. These rates were also age-adjusted using the 1970 US population as the standard population. The percentage change in age-adjusted incidence rates were calculated. Cochran Weighted $\chi^2$ tests were employed to examine the significance of the difference in age-adjusted incidence rates between white and black women. The Linear Regression model was used to assess linear trends of race-difference in age-adjusted incidence rates with year.

Results: From 1989 through 1998, breast cancer incidence rates of both white and black women increased, but the incidence rate of black women increased more rapidly than the rate of white women. During the 9-year period, by average, black women's age-adjusted incidence rate increased by 37.4% while white women's rose by only 20.1%. Because of the difference in change speed, black women's age-adjusted incidence rate was getting closer to white women's. Before 1992 (4 years), the average difference in age-adjusted rates was 10.3/100,000, but after 1992 (6 years), the average difference reduced to 3.8/100,000. In 1989 and 1990, the difference is statistically significant ($\chi^2=6.25, p=0.01$ and $\chi^2=3.80, p=0.05$, respectively), but in the next 8 years, from 1991 to 1998, the difference is statistically insignificant. A fitted Linear Regression model suggests that the difference in age-adjusted incidence rates between white and black women significantly decreased with year ($F=10.0, p=0.01$).

Conclusions: In recent years in Tennessee, the age-adjusted breast cancer incidence of African-American women is approaching and becoming similar to the rate of white women. The reasons for this phenomenon are likely to be multifactorial, but the most important reason is increasing use of mammography.

¹, ², and ³: From Cancer Control Research Unit. Meharry Medical College.
Breast cancer is the most common form of cancer among black and white women in the United States. According to a report from the Surveillance, Epidemiology, and End Results (SEER) program, the incidence of breast cancer has been rising for the past two decades. During the same time period (1973-96) white women had a higher age-adjusted incidence rate of breast cancer mainly due to a significantly higher incidence rate among postmenopausal women aged 50 or older. This age-adjusted incidence has consistently been higher among white than among black women. Between 1989 and 1996, however, the incidence of breast cancer slightly increased by 2.3% among white women, while it significantly rose by 12.2% among black women. Due to the speed difference in incidence rising between white and black women, the gap of breast cancer incidence between white and black women has become smaller and smaller since 1989 (Table 1). In 1989, the difference in age-adjusted rates between white and black women was 21.4/100,000, and in early 1990s, the difference reduced to 18-19/100,000, and in middle 1990s, the difference decreased to 12-13/100,000. More importantly, there is an association between the difference and year (Figure 1). A Linear Regression model \( Y = \beta_0 + \beta_1 X \), \( Y \) is the dependent variable of difference in age-adjusted rates between white and black women, and \( X \) is the independent variable of year) is fitted with the SEER data. The modeling procedure results in a statistically significant association (\( F=10.2, p=0.02 \)). SEER data suggested that black women’s age-adjusted breast cancer incidence rates have been getting closer to white women’s rates since early 1990s.

The purpose of this study is to examine the recent trend in breast cancer incidence among white and black women in the state of Tennessee between 1989 and 1998, calculated from the
Tennessee State data set of the Cancer Reporting System.

Method

Breast cancer incidence data were collected in Tennessee between 1989 and 1998. Breast cancer cases were reported from all Tennessee hospitals to the Tennessee Cancer Reporting System which is a program of the State Department of Health. Population data were also provided by the Office of Health Statistics of the State Department of Health.

Breast cancer incidence rates were calculated by age and race (white and black) for each year from 1989 through 1998. These rates were also age-adjusted using the 1970 US population as the standard population. The percentage change in age-adjusted incidence rates were calculated. Cochran Weighted $\chi^2$ tests were employed to examine the significance of the difference in age-adjusted incidence rates between white and black women. The Linear Regression model was used to assess linear trends of race-difference in age-adjusted incidence rates with year.

Results

Two important changes in breast cancer incidence from 1989 through 1998 were noted: (1) the incidence rates for both white and black women increased for the period; and (2) the incidence rate for black women increased more rapidly than the rate for white women, especially. Table 2 shows that during the 9 year period, by average, black women's age-adjusted incidence increased by 37.4% while white women's rose by only 20.1%. Because of the difference in change speed, black women’s age-adjusted incidence rate was getting closer to white women’s (Table 3). Before 1992 (4 years), the average difference in age-adjusted rates was 10.3/100,000, but after 1992 (6 years), the average difference reduced to 3.8/100,000 (Table 3). More importantly, in 1989 and 1990, the
difference is statistically significant ($\chi^2= 6.25, p=0.01$ and $\chi^2= 3.80, p=0.05$, respectively), but in the next 8 years, from 1991 to 1998, the difference is statistically insignificant. The $\chi^2$ test results suggest that after 1991, black women's age-adjusted incidence rate has been similar to white women's (Table 3). The Linear Regression modeling results (Figure 2) suggest that the difference in age-adjusted incidence rates between white and black women significantly decreased with year ($F=10.0, p = 0.01$).

Discussion

From 1989, (there was no data before 1989 in TN State registry), black women had a more rapid increase in breast cancer incidence than white women and this gap in incidence change between white and black women occurred mainly after age 50. In 50+ age group, from 1989 to 1998, the average increase among black women was 37.3% while among white women was 17.0% (Table 3). In <50 age group, there was no significant difference in average change between white and black women. From 1989 to 1998, the average increase among black women (<50) was 37.4% and among white women (<50) was 31.2% (Table 3).

A number of factors might be responsible for these observed changing trend patterns, including increased mammographic screening and early detection, increased access to care, changing risk factor exposure of African-American women and statistical variability. Some studies have suggested that breast screening has played the most important role in recent increase in breast cancer incidence (2,3). It was reported that there has been a substantial rise in breast screening since 1987, but being older, black or Hispanic, were still associated with less regular use of breast screening (4,5,6).

In Tennessee, Studies of mammography rates (7) have suggested that breast screening has played an significant role in the recent increasing trends in breast cancer incidence in both black and white
women. The greatest increase has been noted among older women, concurrently and since the 1992 congressional mandate supportive screening mammography payment by Medicare for recipient women >65 years of age and older (7). The significant rise in mammography among older women corresponded with the rapid increase of breast cancer increase since 1992 in Tennessee. Older women as well as minorities (African American and Hispanic) women are known to participate in screening mammography to a lesser extent than do younger white and more affluent women. Studies of mammography among Tennessee female Medicare recipients reported in 1995 indicate a substantial increase among both white and African American elderly women (7). While the mammography rate for white women has exceeded that of African American women in the past, the rate of increasing mammography use since 1987 appear to have increased more in the African American women (7). The excessive percentage in mammography use among African American women in late 1980s explained to some degree of the more rapid rise in their breast cancer incidence since 1989. Nevertheless, the rate of mammography use in African American women still lags behind that of white women of comparable age by more than 10 percent.

A growing body of literature suggests that socioeconomic status (SES) explains or is associated with health care access and preventive health participation of minority women, including African American women who are disproportionately represented among the poor. In some studies controlling for both race and SES, race was still associated with less screening after adjusting for SES (8).

Assuming that female breast cancer incidence in Tennessee keeps the same pattern as the recent trends, we can expect that the age-adjusted breast cancer incidence among black women will become similar to that among white women. Using the fitted linear regression equation in early part
of this paper, $\hat{y} = 2004 - x$ ($\hat{y}$ refers to the difference in breast cancer incidence rates between black and white women, and $x$ refers to year), given $\hat{y}=0$ (no difference), the estimated year when the age-adjusted breast cancer incidence is equal between black women and white women in Tennessee is year 2004.
References


**Table 1 Difference in Age-Adjusted Breast Cancer Incidence Rates Between White and Black Women, SEER, 1989-1996 (1/100,000)**

<table>
<thead>
<tr>
<th>Year</th>
<th>White Women (PC*)</th>
<th>Black Women (PC*)</th>
<th>Difference between White and Black Women</th>
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<tr>
<td>1989</td>
<td>110.8</td>
<td>89.4</td>
<td>21.4</td>
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<tr>
<td>1990</td>
<td>114.5 (3.3%)</td>
<td>96.5 (7.9%)</td>
<td>18.0</td>
</tr>
<tr>
<td>1991</td>
<td>116.3 (5.0%)</td>
<td>97.7 (9.3%)</td>
<td>18.6</td>
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<tr>
<td>1992</td>
<td>114.2 (3.1%)</td>
<td>102.2 (14.3%)</td>
<td>12</td>
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<tr>
<td>1993</td>
<td>112.0 (1.1%)</td>
<td>100.8 (12.8%)</td>
<td>11.2</td>
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<tr>
<td>1994</td>
<td>114.6 (3.4%)</td>
<td>102.1 (14.2%)</td>
<td>12.5</td>
</tr>
<tr>
<td>1995</td>
<td>115.3 (4.1%)</td>
<td>102.4 (14.5%)</td>
<td>12.9</td>
</tr>
<tr>
<td>1996</td>
<td>113.3 (2.3%)</td>
<td>100.3 (12.2%)</td>
<td>13</td>
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</table>

* PC: Percentage change compared with 1989.
### Table 2 Percentage Change in Age-Adjusted Breast Cancer Incidence Rates, By Race, Tennessee, 1989-1998 (1/100,000)*

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<td>50+(PC*)</td>
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<td>25.6</td>
<td>256.1</td>
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<td>1990</td>
<td>83.7(1.9)</td>
<td>27.0(5.5)</td>
<td>258.7(1.0)</td>
<td>73.0(7.8)</td>
<td>31.0(20.0)</td>
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<td>1991</td>
<td>86.0(4.8)</td>
<td>27.8(8.6)</td>
<td>265.3(3.6)</td>
<td>76.9(13.6)</td>
<td>30.7(18.5)</td>
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<td>1992</td>
<td>96.5(17.5)</td>
<td>32.3(26.2)</td>
<td>294.6(15.0)</td>
<td>89.5(32.2)</td>
<td>35.3(36.3)</td>
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<td>1993</td>
<td>102.6(25.0)</td>
<td>36.0(40.6)</td>
<td>309.9(21.0)</td>
<td>100.3(48.2)</td>
<td>37.5(44.8)</td>
</tr>
<tr>
<td>1994</td>
<td>102.6(25.0)</td>
<td>36.0(40.6)</td>
<td>309.9(21.0)</td>
<td>100.3(48.2)</td>
<td>37.5(44.8)</td>
</tr>
<tr>
<td>1995</td>
<td>111.9(36.3)</td>
<td>38.2(49.2)</td>
<td>339.2(32.4)</td>
<td>106.4(57.2)</td>
<td>40.9(57.9)</td>
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<td>1996</td>
<td>104.6 (27.4)</td>
<td>35.8 (39.8)</td>
<td>316.9(23.7)</td>
<td>101.2 (49.5)</td>
<td>38.3 (47.9)</td>
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<tr>
<td>1997</td>
<td>98.9(20.5)</td>
<td>34.6 (35.2)</td>
<td>297.3(16.1)</td>
<td>91.1(34.6)</td>
<td>32.8 (26.6)</td>
</tr>
<tr>
<td>1998</td>
<td>100.8 (22.8)</td>
<td>34.5 (34.8)</td>
<td>305.2(19.2)</td>
<td>98.2 (45.1)</td>
<td>36.1 (39.4)</td>
</tr>
</tbody>
</table>

* Based on data from the Division of Health Statistics of the State Department of Health, TN. Rates of 1993 and 1994 are the average rates of the two years.

* PC: Percentage change compared with 1989.

Table 3 Difference in Age-Adjusted Breast Cancer Incidence Rates Between White and Black Women, Tennessee, 1989-1998 (1/100,000)*

<table>
<thead>
<tr>
<th>Year</th>
<th>White Women (PC*)</th>
<th>Black Women (PC*)</th>
<th>Difference between White and Black Women</th>
<th>weighted $\chi^2$ and p value</th>
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<tr>
<td>1989</td>
<td>82.1</td>
<td>67.7</td>
<td>14.4</td>
<td>$\chi^2= 6.25$, p=0.01**</td>
</tr>
<tr>
<td>1990</td>
<td>83.7</td>
<td>73.0</td>
<td>10.7</td>
<td>$\chi^2= 3.80$, p=0.05**</td>
</tr>
<tr>
<td>1991</td>
<td>86.0</td>
<td>76.9</td>
<td>9.1</td>
<td>$\chi^2= 2.25$, p=0.15</td>
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<tr>
<td>1992</td>
<td>96.5</td>
<td>89.5</td>
<td>7.0</td>
<td>$\chi^2= 1.21$, p=0.25</td>
</tr>
<tr>
<td>1993</td>
<td>102.6</td>
<td>100.3</td>
<td>2.3</td>
<td>$\chi^2= 0.16$, p=0.70</td>
</tr>
<tr>
<td>1994</td>
<td>102.6</td>
<td>100.3</td>
<td>2.3</td>
<td>$\chi^2= 0.16$, p=0.70</td>
</tr>
<tr>
<td>1995</td>
<td>111.9</td>
<td>106.4</td>
<td>5.5</td>
<td>$\chi^2= 0.64$, p=0.40</td>
</tr>
<tr>
<td>1996</td>
<td>104.6</td>
<td>101.2</td>
<td>3.4</td>
<td>$\chi^2= 0.25$, p=0.60</td>
</tr>
<tr>
<td>1997</td>
<td>98.9</td>
<td>91.1</td>
<td>7.1</td>
<td>$\chi^2= 1.50$, p=0.20</td>
</tr>
<tr>
<td>1998</td>
<td>100.8</td>
<td>98.2</td>
<td>2.5</td>
<td>$\chi^2= 0.16$, p=0.70</td>
</tr>
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</table>

* Based on data from the Division of Health Statistics of the State Department of Health, TN. Rates of 1993 and 1994 are the average rates of the two years.  
** Statistically significant.

Wu

Figure 1 Difference in Age-Adjusted Breast Cancer Incidence Rates Between White and Black Women, SEER, 1989-1996 (1/100,000)

(Fitted Linear Regression Equation: \( \hat{y} = 2468 - 1.2x \). Analysis of variance: \( F=10.2, p=0.02 \))

Wu

Figure 2 Difference in Age-Adjusted Breast Cancer Incidence Rates Between White and Black Women, Tennessee, 1989-1998 (1/100,000)

(Fitted Linear Regression Equation: \( \hat{y} = 2004 - x \). Analysis of variance: \( F=10.0, p=0.01 \))
Breast Cancer Mortality among White and Black Women in Tennessee: A Fifteen Year Trends

Ling Y. Wu, M.D., Ph.D., Margaret Hargreaves, Ph.D.

The National Cancer Institute (NCI) announced recently that breast cancer mortality for White women in the United States has improved markedly in the 1990s compared with the 1980s, while for Black women, increases in mortality persist (1). From 1980 to 1990, breast cancer age-adjusted mortality rate increased by 0.7/100000 among White women and increased by 5.2/100000 among Black women. From 1990 to 1995, breast cancer age-adjusted mortality rate decreased by 2.5/100000 among White women but still increased 0.3/100000 among Black women (Table 1).

Table 1 U.S. Female Breast Cancer Mortality, Age-adjusted, By Race (1/100,000)*

<table>
<thead>
<tr>
<th>Year</th>
<th>White Women</th>
<th>Black Women</th>
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<tbody>
<tr>
<td>1980</td>
<td>26.6</td>
<td>26.4</td>
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<td>1981</td>
<td>26.8</td>
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<td>1983</td>
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<td>28.0</td>
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<tr>
<td>1995</td>
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<td>31.9</td>
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In Tennessee, breast cancer mortality has the same trends as the whole nations. From 1980 to 1990, breast cancer age-adjusted mortality rate increased by 8.4/100000 among White women and increased by 4.7/100000 among Black women. From 1990 to 1995, breast cancer age-adjusted mortality rate stopped rising among White women but still increased 7.7/100000 among Black women (Table 2).

**Table 2 Tennessee Female Breast Cancer Mortality, Age-adjusted, By Race (1/100,000)**

<table>
<thead>
<tr>
<th>Year</th>
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<td>44.2</td>
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* data source: Health Department of State of Tennessee.

**Discussion**

Experts believe that the recent decline in breast cancer mortality is partly a result of mammography screening, which rapidly increased in the United States during the 1980s and resulted in a shift toward the detection of breast cancer at earlier, more curable stages. Experts also suggested that improved treatment, particularly the widespread adoption of tamoxifen therapy, is likely to have contributed
to the recent declines in breast cancer mortality (1). Since tamoxifen therapy is widely used to treat breast cancer patients, the gap between breast cancer mortality of White women and Black women in the United States can be mostly attributed to the difference in mammography access between the two populations. The fundamental reason behind the differential mammography access, however, is believed to be socioeconomic status.

Poverty is known to be associated with premature mortality and decreased life expectancy. In general, populations in the least developed and most impoverished countries have lower life expectancies compared to developed countries (2). Within the United States, minorities who are disproportionately represented within the lower socioeconomic stratum of the society have higher mortality rates for most of the major causes of death (3).

Breast cancer represents a high percentage of cancer deaths among women in this country. While the incidence or number of new cases per 100,000 population is higher among White women, Black women die at higher rates (4). Yet, breast cancer deaths like those of cervical cancer, are among the most preventable, because they are amenable to early detection and treatment at a time when most curable. Screening mammography, the most effective method for early breast cancer detection is more underutilized by low income women, including Black women, who often present at more advanced stages of disease, and have higher breast cancer mortality than women with higher incomes (5-7). The reason for this deficit in screening participation has been investigated by experts who have identified barriers to screening which are unique or disproportionately associated with poor women (8-11), but further studies are needed to determine whether the gaps between White and Black women would disappear should barriers to screening be overcome.

It was reported that there has been a substantial rise in breast screening since 1987, but being older, black or Hispanic, were still associated with less regular use of breast screening. (12-14). In Tennessee, Studies of mammography rates (15) have suggested that breast screening has played an significant role in the recent increasing trends in breast cancer incidence in both black and white women. The greatest increase has been noted among older women, concurrently and since the 1992 congressional mandate supportive screening mammography payment by Medicare for recipient women >65 years of age and older (15). Older women as well as minorities (African American and Hispanic) women are known to participate in screening mammography to a lesser extent than do younger white and more affluent women. Studies of mammography among Tennessee female Medicare recipients reported in 1995 indicate a substantial increase among both white and African American elderly women (15). While the mammography rate for white women has exceeded that of African American women in the past, the rate of increasing mammography use since 1987 appear to have increased more in the African American women (15). Nevertheless, the rate of mammography use in African American women still lags behind that of white women of comparable age by more than 10 percent. Thus, while increased screening, early detection and diagnosis in recent years have contributed to an increase in breast cancer incidence in both black and white women in Tennessee, they do not totally explain the accelerated incidence of breast cancer in these women (15).

A growing body of literature suggests that socioeconomic status (SES) explains or is associated with health care access and preventive health participation of minority women, including African American women who are disproportionately represented among the poor. In some studies controlling for both race and SES, race was still associated with less screening after adjusting for SES (16). In a large Health Maintenance Organization (HMO) investigation, more White than Black women reported use of mammography, despite similar incomes and the availability of free
mammography (17). Deborah et al. indicated that two explanations may account for this discrepancy: (1) providers' attitudes and values and (2) black women's health beliefs (18). Their logistic regression model showed that the adjusted (for age, SES etc.) probability for not being screened routinely among Black women was 30% higher than White women and it is statistically significant. In addition, among African-American women and white women, the increasing use of mammography was associated with localized disease when diagnosed, whereas, those women not screened are diagnosed with more advanced stage (19).

References

Appendix - C
Purpose/Objectives: To describe the process of establishing a multisite team to conduct research with a multicultural focus on fatigue.

Data Sources: Articles, book chapters, personal experience.

Data Synthesis: Teamwork facilitated development of a productive professional working group, sharing of resources, and data collection culminating in a research proposal for studying cancer-related fatigue in a multicultural population.

Conclusions: Establishing a common goal by investing time, committing to the process, and establishing trust was the secret to effective team functioning.

Implications for Nursing Practice: The prospect of multi-institutional collaboration has implications for oncology nurses in the areas of research and practice. Goals that could not be achieved easily in the setting of a single institution are reached more easily with multisite collaboration and teamwork.

The concept of cancer fatigue provides a rich area for oncology nursing research. One strategy that is useful in conducting this research is combining resources across diverse institutions and among researchers and clinicians with varied expertise. An initial step usually needed in implementing this strategy is the development of a multi-institutional research team of investigators with different clinical experiences, research backgrounds, and institutional support. Collaboration within this team requires commitment to the group and its work and the priority of research. This article focuses on the development of one multidisciplinary, multicultural team of researchers from cancer institutions in the greater Los Angeles area—the FIRE® I: LA Team. The multicultural population in this area presented opportunities and challenges in conducting cancer research. This article presents two aspects of the team’s work: (a) the one-year process used to create a multisite research team whose purpose was to develop a proposal to study fatigue and quality of life within a multisite, multicultural framework; and (b) the approaches the team used to meet the challenges of multicultural research. Successes and obstacles are discussed.

Background

Multisite Team Research

The growth of oncology nursing research over the last 25 years has provided a beginning scientific basis for clinical nursing practice. Individual investigators have moved from single study approaches to the development of research programs that focus on broad problem areas such as self-care (Dodd & Dibble, 1993), communication (Northouse & Wortman, 1990), and pain management (Ferrell, 1995). The Oncology Nursing Society is promoting multi-institutional studies as the next step to expanding this scientific foundation (Mooney & Haberman, 1996). Multi-institutional team research can be used to promote collaboration and sharing of nursing research resources across institutions, improve research designs for greater generalizability of findings, and increase the pool of experienced nursing researchers. This approach has advantages and disadvantages (Stone, 1991). The advantages of multi-institutional team research include results related to the research design, the research work itself, and the team members. Participation by many institutions can enhance the research design by providing access to an increased number of potential subjects (Anderson, 1990). This is an important issue for nursing research because many studies suffer from small sample sizes. Multi-institutional participation also provides potential access to diverse cultures and varied socioeconomic status among research subjects. Thus, the research design can provide for comparisons among these groups, which increases the generalizability of the research findings as well as decreases the number of replications needed to confirm the findings.

Advantages to carrying out the actual research result from the availability of different resources among the participating institutions. One institution may provide

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Fatigue and Multicultural Populations

Fatigue is a common and disturbing symptom for patients with cancer (Winningham et al., 1994). Research to date includes descriptive approaches, testing Anglo-American women (14 Japanese-American, 18 patients with cancer (Winningham et al., 1994). Research on fatigue in ethnic minorities is rare. However, differences in related research among ethnic groups provide evidence of the need to examine ethnic differences in the experience of fatigue and its effect on quality of life. One recent study identified relationships among fatigue, culture, and physical strength (Satariono, Ragland, & DeLorenze, 1996). This study focused on upper body strength in African American and Caucasian patients with breast cancer following treatment. Comparisons included African American and Caucasian women of the same age without disease (controls). No difference in upper body strength was found between the two control groups. At three months, both patient groups reported more limitation in upper body strength than controls; however, limitations were greater in African American patients than in Caucasian patients. At 12 months, Caucasian patients returned to the same level as Caucasian controls, while African American patients did not. The difference was described by African American women as a lack of physical strength and a limitation in physical functioning. Differences were not related to stage of disease, treatment, age, or physical demands of usual daily activities. The investigators concluded that either African American women had differences in physical strength or that their lives were more physically demanding than their Caucasian counterparts, but that further studies were needed.

Additional evidence for differences among ethnic groups relates to perceptions of psychological well-being that transcend cultural boundaries. These differences may include mental/psychological health and a global perception of satisfactory function and well-being (Berzon, Hays, & Shumaker, 1993). Cross-cultural differences were corroborated by eight Hispanic women with rheumatoid arthritis who participated in focus groups as part of an ongoing project by one of the investigators (Padilla, Johnson, et al., 1992). Diverse racial/ethnic group profiles of determinants and dimensions of psychological well-being were described in these focus groups. In addition, some factors may be more important than others across cultural groups. For example, socioeconomic factors related to psychological and physical well-being may be less important to patients who are affluent, have good insurance coverage, and can afford supportive resources as compared to those who are poor, have no insurance, and have limited resources. Furthermore, the meaning of well-being is likely to differ across cultural groups. For example, comfort is a complex phenomenon in the Latino culture that includes the sense of integration, functioning, normalcy, care and nurturing and of feeling secure, safe, and in control. Feeling integrated carries with it the sense of inner peace with oneself that goes beyond physical comfort (Neves, Larson, & Meleis, 1992). This concept of comfort is different in other cultures. Cultural differences on impact of breast cancer were identified in a study of 45 Asian- and Anglo-American women (14 Japanese-American, 18...
Chinese-American, and 13 Anglo-American women (Kagawa-Singer, 1996b) with breast cancer, ages 35–72, who were one to three years post-treatment. No significant difference appeared across groups by age or ethnicity for overall experience of decreased energy or tiredness after chemotherapy or radiation therapy. Significant differences did appear in reports of fatigue by age and ethnicity in the following areas: decreased interest in recreation, decreased recreational activity, increased depression, difficulty sleeping, difficulty concentrating, and difficulty remembering. Requests for assistance with fatigue-related side effects were almost nonexistent for all groups by age and ethnicity. In summary, few studies on fatigue have addressed multicultural issues. However, ethnic differences among responses of patients with cancer to disease and treatment point to the need for such studies. The challenges associated with multicultural studies include access to sufficient numbers of subjects from diverse populations, a scarcity of qualified researchers, the burden of questionnaire translation, and the challenges of interpreting findings (Koehler et al., 1997; Lancaster, 1985; Thiele, 1989; Varricchio, 1997). The investigators of the FIRE® I: LA Team had the potential for meeting these challenges. The research team represented diverse populations and could provide valuable resources for accessing, implementing, and interpreting multicultural studies of fatigue.

Team Development Process

Membership

The FIRE® I: LA Team was formed in response to a call by the Oncology Nursing Foundation for proposals on the development of multisite research for cancer-related fatigue. In creating a workable approach to multisite research in the greater Los Angeles area, a multicultural approach was possible and could provide needed research results. Members of the team provided complimentary areas of expertise for this area of research. At City of Hope National Medical Center, the principal investigator had begun to examine fatigue as it related to quality of life in long-term survivors of bone marrow transplant (Grant et al., 1992). Ferrell had begun to describe fatigue as a component of quality of life in cancer survivors (Ferrell, Grant, Dean, Funk & Ly, 1996). Anderson and Dean had begun to explore physiologic markers for fatigue (Anderson, Dean, Grant, & Kelley, 1996). Expertise in the African American culture was provided when Ashley and Bradshaw from the Drew University Consortium Cancer Center agreed to join the group (Robinson, Ashley, & Haynes, 1996). Padilla, from University of California, Los Angeles (UCLA), brought a wealth of experience in quality-of-life research (Padilla, Grant, & Ferrell, 1992; Padilla, Grant, Ferrell, & Presant, 1996; Padilla, Johnson, et al., 1992) as well as work with minority arthritic patients, which provided a valuable background in fatigue (Padilla & Perez, 1995). Sarna, also from UCLA, provided expertise in the scientific background of fatigue with her research in nutrition and functional status in patients with cancer (Sarna, Lindsay, Dean, Brechts, & McCorkle, 1994). Kagawa-Singer, a nurse anthropologist from the School of Public Health at UCLA, rounded out the team with her expertise in multicultural research in patients with cancer (Kagawa-Singer, 1996b; Kagawa-Singer & Chung, 1994) that included those of Asian descent (Kagawa-Singer, 1996a). Team expertise was enhanced by selection of consultants in fatigue research (Barbara Piper, DNsC, RN), multi-institutional research (Barbara Given, PhD, RN, FAAN), and ethnic issues (Margaret Barton-Burke, MSN, RN). Thus, the FIRE® I: LA Team consisted of researchers and consultants who could provide current research experience in cancer-related fatigue, long-standing expertise in quality-of-life research, and expertise in multicultural research related to four cultural groups: African American, Asian, Latino, and Caucasian. Team members knew each other professionally, but they had not collaborated on a research project together. Each could contribute expertise in one or more aspects of cancer-related fatigue in multicultural groups. A proposal was submitted to the Oncology Nursing Foundation for a one-year development grant. Figure 1 presents the overall objectives of this grant.

We received funding for the proposal, and a one-year development grant was implemented. This first year’s work of the FIRE® I: LA Team was aimed at developing the team into a cohesive group and creating a viable research proposal to submit for funding.

I. Develop the research team.
A. Acquire knowledge about each investigator and participating institution to facilitate multi-institutional research.
B. Cultivate a multidisciplinary team approach through group work on data analysis, interpretation, and synthesis of investigators’ current data-based projects related to fatigue.
C. Explore the multicultural perspective of fatigue via multicultural team work and multicultural studies.

II. Develop the mechanisms for a multi-institutional research project on cancer-related fatigue.
A. Report primary analysis of investigators’ current studies.
B. Conduct secondary analysis of investigators’ completed projects related to fatigue and ethnic studies.
C. Interpret and synthesize study findings through monthly research team meetings.
D. Identify evolving research questions that focus on nursing interventions for cancer-related fatigue.
E. Integrate a multicultural approach into evolving research questions.

III. Prepare a grant proposal for an intervention study for cancer-related fatigue within a multicultural population of patients with cancer.
A. Develop an intervention for cancer-related fatigue for further evaluation.
B. Develop procedures for multi-institutional approval and implementation of the proposed phase II study.
C. Submit the phase II study for competitive review and funding.

Figure 1. Grant Objectives and Strategies
Team Development and Accomplishments

Good communication is essential to the development of a collaborative team (Coeling & Wilcox, 1994). Three elements of communication are important: content, relationships, and time. Content builds individual credibility, relationships are needed to build trust, and adequate time is needed for the process of communication to develop. A proposed time frame, strategies, and activities were developed and carried out in an effort to foster good communication among team members and implement the process of research proposal development.

Four phases were used to develop a cohesive team and create a research proposal: initiation, analysis, synthesis, and outcome (see Table 1). The group held a one-day meeting each month for one year. The principle investigator and team members at City of Hope were responsible for correspondence, meeting arrangements, agendas, minutes, and literature reviews.

During the three-month Initiation Phase, monthly meetings rotated among sites and enabled members of the research team to become familiar with each institution. During this phase, we reviewed the one-year development grant objectives, discussed confidentiality issues, and began plans for publication. We explored information on the research process used at each institution, which provided a basis for knowing when materials had to be submitted to each institution for scientific review. Tours of the facilities and introduction of key personnel provided a working familiarity with the various sites. Team members identified and solved transportation and parking problems for visitors to each institution. During the Analysis Phase, each investigator identified his or her completed and concurrent studies, and from that we developed a five-month schedule of presentations of relevant studies. Studies were selected for their ability to reveal information related to the group's multi-institutional and multicultural focus. A specific set of questions was designed for team members to use during these research presentations (see Figure 2). The questions were formulated to provide a stimulus for identifying theoretical and methodologic issues important in designing a fatigue proposal. This approach focused the discussion following each presentation. Implications for the research proposal to be developed by the FIRE® I: LA team were identified during the discussion. Presentations included quantitative and qualitative data and provided descriptive information on cancer-related fatigue. For each presentation, the format included presentation of specific content, critique/analysis and synthesis of the content, identification of cultural implications, identification of implications for future studies, and development of research questions for further study. Team members' summaries of each presentation were recorded on the questions/comments forms, compiled, and discussed again at the next team meeting. The summaries were used to develop a definition of fatigue, identify instruments used in measuring fatigue, and explore theoretical and measurement issues. Questions for consultants to the research team also were identified. During this phase, several investigators met with the consultants at an oncology conference. One consultant, Piper, provided expertise on instrumentation and fatigue definition. Given provided expertise on methodologic issues and answered questions on the advantages and disadvantages of proposed designs, and Barton-Burke provided expertise in multicultural issues and clinical relevance. Questions resulting from the analysis phase presentations were presented to the consultants, and their comments were used in the next steps of the team process.

During the Synthesis Phase, decisions were made on theoretical and design issues to be addressed in the developing proposal. By this point, the team had solidified. All members were contributing actively, and intense discussions about theoretical and methodologic decisions occurred. Critiques from the consultants helped the group reach consensus about the selection of a research design for the proposal. During this phase, descriptive statistics about the cancer population were gathered from each of the investigators' institutions and additional institutions where access was possible. The data needed to include the annual number of new patients with cancer treated at each institution according to type of cancer, stage of disease, medi...
cultural treatment received, age distribution, ethnic status, and socioeconomic status. The availability of these data was problematic at most institutions. Stage of disease and medical treatment frequently were not divided by disease site, which made it difficult to identify target populations by cancer diagnosis. Ethnic status was incomplete at all the institutions and, when available, used different ethnic groupings, described only the cancer population in general, and was not available for specific diagnosis or treatment groups. Because categories of ethnic status differed across institutions, combining data across institutions was difficult. For example, the Asian population was treated as one group at some institutions and subdivided (e.g., Chinese, Cambodian, Korean) at other institutions. Socioeconomic status was not available at most of the institutions. During the Synthesis Phase, the aims and research methods for the evolving proposal were agreed upon after much discussion and debate. The biggest challenge identified was accruing a sufficient number of research subjects from specific ethnic groups within specific cancer diagnoses. Because of a lack of previous research identifying the value of a specific fatigue intervention, the creation of a proposal using an experimental or quasi-experimental design was rejected. In addition, no one in the group had strong feelings on selection of a specific intervention (e.g., nutrition, exercise). Research team members agreed that testing an unproven fatigue intervention among ethnic or cultural groups without knowing differences in fatigue among these groups was premature. They also agreed that descriptive, prospective data on fatigue among different cultural groups was an essential next approach. Thus, a large prospective correlational study design was selected. This allowed for comparisons of cancer-related fatigue across cultures. Because of the larger number of subjects needed for correlational designs, four groups were identified: English-speaking, Spanish-speaking Latino; English-speaking Asian; and Caucasians of northern European descent. Only one non-English-speaking group was included because of the complexity and expense of translating instruments (Varricchio, 1997) and insufficient numbers of potential subjects for each of the Asian subgroups.

During the Synthesis Phase, the research team also finalized the definition of fatigue to be used in the proposal.

Cancer-related fatigue is defined as a subjective perception or experience related to disease or treatment. This sensation is multidimensional, is not easily relieved by rest, and has a profound impact on the dimensions of quality of life, including physical, psychological, social, and spiritual well-being. This fatigue is influenced by the cultural context of the individual and is associated with a reduced capacity to carry out expected or required daily activities.

During the Outcome Phase, the work of proposal writing occurred. Each member was responsible for developing specific sections of the proposal (see Table 2). The principal investigator was responsible for combining all sections of the proposal from each member, developing the budget, and revising the document into a useful, coherent proposal. A proposal was prepared and completed as planned.

Summary of the Success and Obstacles of the Team Development Aspect

The activities carried out during the four phases allowed the FIRE® I: LA Team to develop into a cohesive, collaborative working group whose success was measured partly in the creation of a research proposal for studying cancer-related fatigue in a multicultural population drawn from various institutions in the Los Angeles area. During the team development process, various successes and obstacles occurred. Successes included formation of a productive, professional working relationship among the team members, participation by each member in the presentation of completed and ongoing research related to fatigue, and group consensus on the definition of fatigue and on the conceptual and methodologic approach to be used in the proposal submitted for further funding. Sharing of resources across institutions occurred, but it was confined to providing space and support for monthly meetings. The biggest obstacle that occurred was obtaining sufficient new patient information from each participating institution to make a valid decision about the availability of the targeted population. Another obstacle was that the limited number of meetings (12 over a year’s time) resulted in difficulties when absence occurred. Including two individuals from each institution assisted in communication to the absent member. However, the schedule of presentations and writing tasks made absence difficult. Missing one meeting could mean a loss of momentum in the development of the proposal.

Geographic distance between institutions presented another obstacle. Each participating institution was located so that coinvestigators from the other institutions had to travel through the downtown area to get to the meetings. A one-hour commute in midday traffic could easily deteriorate to a 2½–3 hour commute during rush hour. Substitution of live teleconferences for face-to-face meetings would be one approach to alleviate these geographic distances. However, the participating institutions did not have this capability. Despite these obstacles, the primary task of proposal development was completed on time.

Multicultural Research Issues

Throughout all phases, team members identified many multicultural issues related to conducting research on fatigue and quality of life. These issues were discussed in depth, and specific approaches were selected.

Theoretical Issues

A critical aspect of all research is the inclusion of clear definitions of the major concepts being studied. In the proposed research, several concepts were espe-
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<td>- Demographic issues (e.g., gender, age, socioeconomic)</td>
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<td>- Concentration</td>
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<td>- Depression and fatigue</td>
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<td>- Culture</td>
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<td>c. Check for validation with ethnic groups.</td>
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<td>d. Scanning instrument example</td>
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<td>6. Intervening variables viability or combining cancer treatments</td>
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<td>7. Study site description</td>
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especially important: fatigue, quality of life, and multiculturalism. The FIRE® I: LA Team developed the conceptual definition of fatigue within the context of multicultural research. This definition makes explicit the investigators' assumptions that fatigue is culturally bound, resulting in an expectation that different cultures may define, rate, and treat fatigue differently. The investigators defined quality of life as a level of well-being and the satisfaction associated with an individual's life or how it is affected by disease, accidents, and medical treatment (Grant, Padilla, Ferrell, & Rhiner, 1990). A four-dimensional model of quality of life
was accepted and included physical, psychological, social, and spiritual well-being.

The most challenging of the definitions, however, was the multicultural concept. Our focus included ethnic status and socioeconomic status as components of culture; thus, a broad definition of the term multicultural was needed. After reviewing several approaches to defining this concept, we agreed to use one by Kagawa-Singer (M. Kagawa-Singer, personal communication, August 1996). Culture is defined as the shared beliefs, values, and behaviors of a group of people that are learned by its members. Kagawa-Singer further elaborated on this definition by indicating that culture is a tool that operationalizes a group's worldview into symbols of beliefs, values, and practices that its members learn to use to ensure their well-being. It identifies a group of people as a unique population with a common identity. A group's worldview organizes the universe into a cohesive, comprehensible vision of reality. Their religion, life philosophy, or both transform their worldview into symbols of beliefs and values that can be used to derive meaning in life and a purpose of being and prescriptions for behavior. This set of common beliefs and rules for behavior provides consistency and predictability for its members in everyday social interactions as well as for those inevitable stressful life events such as sickness and death (Kagawa-Singer, 1998).

We also looked at culture as it related to our local area. The greater Los Angeles area has multiple cultural groups that are difficult to classify. To apply this broad definition of culture to our study, we discussed the various groups that were possible and finally agreed to focus on the four ethnic groups mentioned earlier.

Including the aspect of socioeconomic status as an important component of culture also seemed very applicable to the population in the greater Los Angeles area. Perceptions of fatigue may vary among people from different socioeconomic strata, and the ability to treat fatigue through social support mechanisms (e.g., help from family members and neighbors) may be extremely limited when socioeconomic status is low. We discussed this "culture of the poor" (American Cancer Society, 1989) and felt that it was a very important component of the multicultural research on fatigue and needed to be addressed within the design of the study.

**Design Issues**

Design issues revolved around the sample and instrumentation. Because the sample needed to reflect the cultural strata to be included, the possibility of accruing sufficient numbers of any one cultural group plus the amount of travel needed to tap different geographic areas were practical issues that influenced our decision. We decided to include English- and Spanish-speaking Latino patients who were of Mexican descent because both groups were sufficiently available. Much discussion about accruing Asian patients involved what subgroups were to be included, where they could be found, and how large each subgroup was. We also discussed translation issues for the Asian population. Literature reviewed revealed a serious lack of research on the various Asian populations. The group consensus was to include one Asian group, defined as any individual of Asian descent (e.g., Japanese, Chinese, Vietnamese, Cambodian, Korean), but only those who were English-speaking. This would provide one Asian contrast group. The fourth ethnic group was Caucasian, which was defined as those of Northern European descent.

By deciding to include four cultural groups, limitations automatically occurred in designing the study. An intervention study would require a control and an experimental group. When this requirement was combined with four ethnic groups and socioeconomic status to include at least two levels of poor and not poor, the resulting design requirement produced 16 cells (4 ethnic groups x 2 socioeconomic groups x 2 experimental and control). The impracticality of accruing subjects successfully to such a design was an obstacle that the team did not overcome. For this reason, a correlational study of four ethnic groups that included lower socioeconomic class as well as a non-lower socioeconomic group was proposed rather than an intervention study. Instrumentation decisions followed next. An enculturation tool was needed to describe the degree to which the individual represented his or her country of origin. The instrument needed established reliability, validity, and sensitivity across a number of cultures. One instrument was found—the Suinn-Lew Asian Self-Identity Acculturation Scale (Suinn, Ahuman, & Khoo, 1992). This scale was created for an Asian population and needed to be adapted for the Latino group.

Translation actually was necessary for only one group—the Mexican Latinos. The tools used to measure variables in the study included an instrument to measure fatigue and one to measure quality of life. We discussed cost, accuracy, specificity to culture and recommended methods for translation. Accurate instrument translation requires the initial translation to the needed language, back translation to check accuracy, and assistance from people within the culture to check for errors and assist with interpretation of results (Varricchio, 1997). The resources of the group included some experience with the translation needed. In addition, we had to request other resources in the proposal to carry out all the steps needed.

**Procedural Issues**

One procedural issue was how to accrue patients from multiple sites in the greater Los Angeles area. To include sites with the most population of patients from the four ethnic groups, information on each institution was examined. Although the data examined were incomplete, trends in diagnosis and ethnicity were apparent. All possible sites were identified. A map of these sites was designed to select the final sites and plan the number of research assistants needed for accrual and patient follow-up. Facilities were selected based on the population demographics, geographic vicinity, and travel distance. Clusters of the targeted ethnic groups were apparent: the west side of Los Angeles served a high Asian population, south Los Angeles served a predominantly
African American group, and eastern Los Angeles County served Asian and Latino families. The second issue discussed under procedural issues was that of research assistant selection and training. Some debate occurred over whether or not the research assistant's ethnicity/culture needed to match that of the patient. We agreed that the best approach would be to match these two. One of the investigators had extensive experience in training research assistants for multicultural research (Kagawa-Singer & Chung, 1994). The steps for research training were identified under her leadership, and this content was included as a major component of the grant proposal. We discussed the potential for having research assistants cross over to other cultures once they had developed experience in the projected study. Additionally, ways to evaluate training and accrual were developed. Four steps are necessary in the development of culturally competent care. Table 3 shows some of these procedures, and a related publication identifies more detail (Dana, 1993; Kagawa-Singer, 1998).

### Summary

Multi-institutional studies create issues that require attention prior to the development of an effective working group. What keeps people together working as a group when they are not getting paid, have too much to do already, and have progress on personal research to maintain? Our answer involved visualizing a common goal that could not be accomplished working alone in a single institution. Establishing this common goal takes time, commitment, and trust if the team is to function effectively. The challenges that faced the FIRE® II: LA Team in implementing a multi-institutional study required several approaches. The principal investigator initiated contact with each member of the study group and, because of a proven record of accomplishments and leadership style, each readily accepted the invitation to participate. The group was comprised of clinical experts as well as advanced researchers: a psychologist, an anthropologist, a physician, nurses, and a public health specialist. The investigators represented all of the proposed study cultures: African-American, Asian, Latino, and Caucasian. They contributed not only their professional expertise but also their life experiences. Several approaches were used to establish the team mind set. Deepening commitment of each member occurred at different times. Establishing monthly meetings that rotated among the participating facilities allowed each member to tour the potential site and appreciate the unique contribution it provided for the study. The group developed a schedule of co-investigator presentations in which personal research was presented in a manner that emphasized fatigue issues. Each member was required to re-analyze current and past research data that would enhance the understanding of fatigue occurrence, impact on quality of life, family impact, and financial impact always within a cultural framework. This requirement of each group member demanded significant preparation and a willingness to have personal work examined for its contribution to the proposal development. This activity solidified each individual’s commitment to the common goal—a multisite, multicultural research proposal.

Our experience resulted in a successful approach to team development. We developed a proposal and submitted it in response to the Oncology Nursing Foundation Instrumentation Request for FIRE®-II Proposals. The proposed proposal addressed the scientific foundation of cancer fatigue as well as the cultural diversity that challenges all clinical cancer care.

The authors acknowledge the contributions of the following consultants: Margaret Barton Burke, MSN, RN, Barbara Given, PhD, RN, FAAN, and Barbara Piper, DNSc, RN.

### Table 3. Culturally Competent Care

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<td>K - Knowledge</td>
<td>Reading and discussion of the values, beliefs and behavioral practices of the targeted culture</td>
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<td>O - Openness and observation</td>
<td>Observing the patients’ expectations and how these differ from the clinician/researcher. Being open to different beliefs and traditions</td>
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<tr>
<td>P - Patience</td>
<td>Allowing sufficient time to earn patients' respect</td>
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<tr>
<td>F - Facilitation</td>
<td>Facilitating mutually acceptable goals</td>
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### References


Grant, M., Padilla, G.V., Ferrrell, B.F., & Rhiner, M. (1990). Assessment of...
quality of life with a single instrument. *Seminars in Oncology Nursing*, 6, 260–270.


For more information on this topic, visit these Web sites:

- The Body: Fatigue and Anemia

- Cancer Care: Section on Fatigue
  [http://www.cancercareinc.org/campaigns/fatigue.htm](http://www.cancercareinc.org/campaigns/fatigue.htm)

- Symptom Control in Cancer: Fatigue
  [http://www.graylab.ac.uk/cancernet/304461.html](http://www.graylab.ac.uk/cancernet/304461.html)

*These Web sites are provided for information only. Their hosts are responsible for their own content and availability. Links can be found at [www.ons.org](http://www.ons.org).*
Appendix- D1
IDENTIFICATION OF BREAST CANCER RISK FACTORS: A REVIEW PAPER ON MINORITY AND MAJORITY POPULATIONS

Authors: Aaron Banks and Susan B. Robinson, M.D., M.P.H., Charles R. Drew University of Medicine and Science, Los Angeles, CA

Objective: To identify risk factors and biologic factors that influence breast cancer aggression and survival rates among minority populations.

Background: Minority patients, especially African Americans, are prone to acquire the most aggressive forms of breast cancer and are more likely to die from the disease compared to majority groups.

Methodology: An expansive review of current medical literature with a focus on identifying culturally specific risk factors for breast cancer was conducted. The review highlights molecular factors that impact both the pathogenesis and prognosis.

Results: Differences in risk perception, knowledge, and attitudes about breast cancer explain, in part, the poor survival rates among minorities. Body weight, lactation history, and physical activity may contribute to the disparity of breast cancer aggression among minority and majority populations. Reviews of literature in molecular biology suggest that minority patients are predisposed to the most aggressive forms of breast cancer. The presence of the aromatase enzyme and expression of cathepsin D protease are key factors in breast neoplastic growth and metastasis. These molecules are of interest for the treatment and prognosis of the highly aggressive forms of breast cancer.

Conclusion: Additional studies of molecular research may be beneficial in identifying patients at risk for developing aggressive forms of breast cancer. A better understanding of factors that determine the aggressiveness of breast cancer may lead to the design of more effective therapies.
Appendix- D2
AUTHORSHIP RESPONSIBILITY, FINANCIAL DISCLOSURE, AND COPYRIGHT TRANSFER

Manuscript Title: A Review Paper on Factors That Influence... Corresponding Author's Name: Address: Telephone Number: Facsimile Number: E-mail Address: 

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Appendix -E
October 3, 1999

Susan B. Robinson, MD, MPH.
Research Training Institute
Charles R. Drew University of Medicine and Science
1621 East 120th Street
Los Angeles, Ca 90059

Dear Dr. Robinson:

This letter is simply to say “thank you” for giving me the opportunity to learn so much about breast cancer. I really enjoyed working with you.

Since I met you 4-month ago, I have learn a great deal about breast cancer and its impact on the black community. I especially enjoyed the opportunity to educate young people through presentations. You challenged me intellectually now I am more prepared to better serve our community.

So, because of the above, I am willing to share my over 10 years experience and expertise as a Clinical Researcher/Coordinator and Health Educator to work with you in different breast cancer projects. I want you to know I will always make time to help you, especially when you are in the community to train and teach.

Again thank you very much for your kindness, I look forward to future collaborations with you.

Sincerely,

Tsega Habte, Pharm.MSc.
Instructor, Internal Medicine and
Senior Clinical Research Associate
Appendix- F
Bibliography of Final Report

A. Publications and meeting abstracts

Aaron Banks, medical student


Sherry Crump, MD, MPH


Vanessa Parker, Ph.D.


Ling Wu, Ph.D.

2. “Recent Trends in Breast Cancer Incidence Among Black and White Women in Tennessee,
1989-1998.” -Being reviewed for publication (See-Appendix B1).
3. “Breast Cancer Mortality among White and Black Women in Tennessee: A fifteen year trend” -
In preparation (See Appendix B2).

Kangman Zhu, M.D., MPH, Ph.D.

1. “Estrogen Receptor Status of Breast Cancer: A Marker of Different Stages of Tumor or
2. “Methyl-deficient diets, methylated ER genes and breast cancer: an hypothesized association”.

All original six fellows present abstracts at the DMMCCC annual conferences until the center loss
funding.

B. Personnel

1. Aaron Banks
2. Louis Bernard
3. Lori Carter
4. Sherry Crump, M.D., MPH
5. Ida Jean Davis, BA, PA, BS, DC, PhD ©
6. Mosunmola Alaba George-Taylor
7. Tsega Habte, Pharm., MSc.
8. Margaret Kirkclady Hargreaves
9. Melanie Hill
10. Ralph Highshaw
11. Todd Huffman
12. Anthony Kingsley, M.D.
13. Robert S. Levine
14. Patricia Matthews - Juarez, Ph.D.
15. Vanessa C. Parker
16. Linda Lue Pederson
17. Susan Robinson, M.D. MPH
18. Carolyn Rowley
19. Mary Regina Saunders
20. Kofi Alavi Semenya
21. Samuel J. Shacks, Ph.D., M.D.
22. Beverly D. Taylor, M.D.
23. Ling Y. Wu
24. Kangmin Zhu
MEMORANDUM FOR Administrator, Defense Technical Information Center (DTIC-OCA), 8725 John J. Kingman Road, Fort Belvoir, VA 22060-6218

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1. The U.S. Army Medical Research and Materiel Command has reexamined the need for the limitation assigned to technical reports. Request the limited distribution statement for reports on the enclosed list be changed to "Approved for public release; distribution unlimited." These reports should be released to the National Technical Information Service.

2. Point of contact for this request is Ms. Judy Pawlus at DSN 343-7322 or by e-mail at judy.pawlus@dt.amedd.army.mil.

FOR THE COMMANDER:

Encl

PHYLLIS M. RINEHART
Deputy Chief of Staff for Information Management
Reports to be changed to "Approved for public release; distribution unlimited"

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