

AD\_\_\_\_\_

Award Number: W81XWH-07-1-0694

TITLE: Vitamin D, Breast Cancer and Bone Health

PRINCIPAL INVESTIGATOR: Eva Balint, M.D.

CONTRACTING ORGANIZATION: Stanford University  
Stanford, CA 94305

REPORT DATE: October 2008

TYPE OF REPORT: Annual Summary

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

DISTRIBUTION STATEMENT: Approved for Public Release;  
Distribution Unlimited

The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision unless so designated by other documentation.

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
<small>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</small>					
1. REPORT DATE (DD-MM-YYYY) 15/01/09		2. REPORT TYPE Annual Summary		3. DATES COVERED (From - To) 15/09/2007-14/09/2008	
4. TITLE AND SUBTITLE Vitamin D, Breast Cancer and Bone Health				5a. CONTRACT NUMBER W81XWH-07-1-0694	
				5b. GRANT NUMBER BC063523	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Eva Balint				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Stanford University 300 Pasteur Drive Stanford, CA 94305				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Medical Research and Materiel Command Fort Detrick, MD 21702-5012				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT This is a multidisciplinary postdoctoral award investigating the role of vitamin D in aromatase inhibitor-induced osteoporosis in breast cancer, supporting studies in basic science, clinical research and epidemiology. During the reporting period, the recipient successfully made the transition towards becoming an independent investigator in translational research the breast cancer field. After several cycles of optimizing and re-designing the protocol, the clinical trial received all necessary approvals including the IND from the FDA, and approvals from the IRB's from both at Stanford University and the DoD, and recruitment is expected to start shortly. The recipient completed the majority of core courses and requirements for the Master's degree in Epidemiology, and is currently working on the master's thesis on the role of vitamin D in breast cancer in general, with a special focus on aromatase inhibitor-induced bone loss. For the animal studies, the recipient obtained all necessary approvals for the experiments (Stanford University and DoD), and the studies will be performed during the second year.					
15. SUBJECT TERMS Vitamin D, breast cancer, bone loss, aromatase, inhibitors,					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 6	19a. NAME OF RESPONSIBLE PERSON USAMRMC
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (include area code)

## Table of Contents

	<u>Page</u>
Introduction.....	4
Body.....	
Key Research Accomplishments.....	4
Reportable Outcomes.....	5
Conclusion.....	5
References.....	5
Appendices.....	5

**Introduction:**

This is a multidisciplinary postdoctoral award investigating the role of vitamin D in aromatase inhibitor-induced osteoporosis in breast cancer. Building on the recipient's past experience in medicine, basic science and bone biology, the award supports the recipient's transition from basic science research towards establishing her as a successful new translational investigator in the breast cancer field. In order to achieve this goal, the award supports a basic science component (studies using an animal model), a prospective clinical trial and education toward a master's degree in the field of epidemiology. The basic science component focuses on the effect of vitamin D on breast cancer and aromatase inhibitor-induced bone loss in an animal model. The clinical component is a randomized controlled prospective trial of vitamin D in preventing aromatase inhibitor-induced osteoporosis in breast cancer patients. The epidemiology component focuses on the role of vitamin D in breast cancer and aromatase inhibitor-induced osteoporosis, using methods of epidemiology, and the recipient is working towards obtaining a Master of Science (MS) degree in Clinical Epidemiology.

**Key Research Accomplishments:**

During the reporting period, the recipient successfully made the transition towards becoming an independent investigator in the breast cancer field. After several cycles of optimizing and re-designing the protocol, I have presented the protocol to the Breast Cancer Committee, the Scientific Review Committee, and received necessary approvals including the IND from the FDA, Stanford's IRB and the DoD IRB. This process has been particularly challenging because several regulatory agencies are involved in addition to the two IRB's (Stanford University and the DoD). The protocol has been repeatedly modified to satisfy the ever-growing number of suggestions and requirements from the various committees and agencies, and resulted in re-submissions and amendments. The protocol is currently undergoing an amendment revision with the local Stanford IRB and I expect to receive full approval and start enrollment by the end of February. Even though my mentors provided guidance with the process, it has been quite a learning experience to navigate this complex system. Another difficult barrier has been my lack of access to the funds and my pending status with Stanford University. Because it is a violation of Stanford University policy and federal regulations to recruit, enter, follow subjects or analyze human subjects data unless the PI has IRB approval for the project, funds for the entire award has not been available until the protocol received Stanford IRB approval in October 2008. This created an additional challenge, for lack of salary and access to statistician and other support necessary for the preparation and submission of the protocol. Relying on personal favors during this period made the process exceedingly long and cumbersome. On the other hand, I am indebted to the countless individuals at Stanford who's encouragement, help and personal favors made this project possible. This hurdle resulted in delays in performing the animal studies, as well as taking classes for full credit in the Epidemiology Master's program.

As far as the animal studies, the recipient obtained all necessary approvals for the experiments (both from Stanford University and the DoD), and the yearly renewal has been satisfied as well. As the funds have not been available, the actual studies will be performed during the second year of the award.

The recipient completed/audited the majority of core courses and requirements for the Master's degree in Epidemiology, and is currently working on the master's thesis on the role of vitamin D in breast cancer in general, with a special focus on aromatase inhibitor-induced bone loss. Please see the Appendix for the full list of courses taken/audited.

**Reportable Outcomes:**

The award recipient presented a poster at the Era of Hope meeting in Baltimore, MD, June 25-28, 2008. The poster and the proposed research received positive comments from breast cancer consumer advocates and fellow scientists as well.

**Conclusions:**

The recipient of this multidisciplinary postdoctoral award successfully made the transition from basic science physician-scientist towards becoming a clinical and translational research investigator. Despite the steep learning curve and challenges, she obtained the necessary approvals to proceed with the randomized controlled trial. Enrollment for the trial is expected to start at the end of February 2009. Approvals have been obtained for the animal studies as well, and the studies will be performed during the second year of the award. The recipient also audited/completed many of the courses necessary for obtaining the master's degree in epidemiology and currently working on the master's thesis in the field of vitamin D and breast cancer.

**References:**

N/A

**Appendix:**

List of courses taken/audited in the Epidemiology master's program:

Fall 07/08

HRP 225	Design and conduct of clinical and epidemiologic studies
HRP 259	Introduction to probability and statistics for epidemiology
HRP 236	Epidemiology Research Seminar
HRP 223	Data management and statistical programming (selective)

Winter 07/08

HRP 226	Advanced epidemiology and clinical methods
HRP 261	Intermediate biostatistics: analysis of discrete data
MED 225	Responsible conduct of research
HRP 236	Epidemiology Research Seminar
HRP 230	Cancer epidemiology (selective)

Spring 07/08

HRP 251	Design and conduct of clinical trials
HRP 262	Intermediate biostatistics: regression, prediction, survival
HRP 216	Analytical and practical issues in clinical and epidemiology research
HRP 236	Epidemiology Research Seminar

Winter 08/09  
Stats 211 Meta-analysis  
HRP 351 Innovation in Health Care  
HRP 399 Masters Thesis