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**ENVIRONMENTAL MEDICINE GENOME BANK (EMGB):  
CURRENT COMPOSITION**

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## **EXECUTIVE SUMMARY**

The USARIEM Environmental Medicine Genome Bank (EMGB) project is an ongoing effort to identify genes that correlate with environmental injuries and illnesses and with human physical performance. To accomplish this, the EMGB banks DNA samples from human volunteers who have participated in USARIEM environmental and human performance studies and maintains a registry of phenotypic information.

This report provides summary information about the samples currently stored in the EMGB. It is intended as a reference document for researchers who wish to make use of this resource.

## INTRODUCTION

Based on recent reports, it seems likely that there is a significant genetic contribution to some aspects of human physical performance (1-4) and to the susceptibility to environmental illness and injury. However, very few candidate genes have been identified, in part because few laboratories have access to large populations of well-characterized subjects drawn from a wide variety of genetic backgrounds. The U.S. Army Research Institute of Environmental Medicine (USARIEM) is uniquely qualified to undertake a search for these genes, by virtue of its access to Army personnel and its ability to define precisely those phenotypes relevant to environmental illnesses and human performance

Large numbers of samples are typically needed to identify genes that contribute to complex traits. Accordingly, the USARIEM Environmental Medicine Genome Bank (EMGB) banks DNA samples and catalogues phenotypic information obtained over the course of multiple USARIEM studies. By pooling samples and data from several studies, it becomes possible to undertake genetic analyses that would otherwise not be feasible.

The EMGB serves as an Institute resource, and aliquots from the bank are available to individual investigators upon request. This document summarizes the current contents of the bank.

## SUMMARY OF THE CONTENTS OF THE EMGB

Study #	Study designation	PI, Division	Study location	Study dates	# of Samples submitted	# of Samples currently banked	Phenotypic information available	Genotypes studied to date
1	Normal controls	Sonna, TMD	USARIEM	Mar - Apr 1998	62	57	1, 2	ACE
2	Army Basic Recruits Study	Sharp, MPD	Ft. Jackson, SC	Jun - Jul 1998	152	145	1, 5, 6, 7	ACE, NOS1
3	Mt. Logan Study	Muza, TMD	Mt. Logan, Canada	May - Jun 1999	13	13	1, 2, 3, 4, 8	ACE

### KEY TO AVAILABLE PHENOTYPIC INFORMATION

1. Age, race and gender
2. Smoking status
3. Presence or absence of asthma/exercise-induced bronchospasm by history
4. Spirometry data
5. Spirometry before and after exercise
6. Army Physical Fitness Test scores
7. Extensive measurements on the physical performance response to training
8. Oxygen saturation with increasing altitude

### KEY TO GENOTYPES

ACE : Angiotensin Converting Enzyme Insertion/Deletion Polymorphism, Exon 16  
 NOS1 : Neuronal Nitric Oxide Synthase CA repeat Polymorphisms, Exon 29

## DISCLAIMERS

The opinions or assertions contained herein are the private views of the authors and are not to be construed as official or as reflecting the views of the Army or the Department of Defense.

Human subjects participated in these studies after giving their free and informed voluntary consent. Investigators adhered to AR 70-25 and USAMRMC Regulation 70-25 on the use of volunteers in research.

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