

Fiscal Year:	FY 2004	Task Last Updated:	FY 03/24/2006
PI Name:	Hamilton, Marc Ph.D.		
Project Title:	Genomics of Human Bedrest and Exercise		
Division Name:	Human Research		
Program/Discipline:	NSBRI Teams		
Program/Discipline--Element/Subdiscipline:	NSBRI Teams--Muscle Alterations and Atrophy Team		
Joint Agency Name:		TechPort:	No
Human Research Program Elements:	None		
Human Research Program Risks:	None		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	65211	Congressional District:	9
Comments:			
Project Type:	GROUND	Solicitation / Funding Source:	NSBRI
Start Date:	07/01/2001	End Date:	10/31/2005
No. of Post Docs:	1	No. of PhD Degrees:	
No. of PhD Candidates:	0	No. of Master' Degrees:	
No. of Master's Candidates:	1	No. of Bachelor's Degrees:	
No. of Bachelor's Candidates:	1	Monitoring Center:	NSBRI
Contact Monitor:	Contact Phone:		
Contact Email:			
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):			
Grant/Contract No.:	NCC 9-58-MA.002.08		
Performance Goal No.:			
Performance Goal Text:			
Task Description:	<p>Unloading of skeletal muscle system through space flight or bed rest causes profound deleterious events in the body. Muscle strength, endurance, and risk of injury are compromised. This project will perform an analysis of the expression of most all the genes expressed in skeletal muscle during unloading, and thereby provide a more global and integrated picture of potential underlying transcriptional mechanisms involved. Using microarray methodology and bioinformatics tools for analysis, these studies will characterize the influence of unloading and exercise on the differential expression of over 33,000 human genes, and in a smaller subset in rats for a translational approach to countermeasure development and comparative validation. The contrast between unloaded muscle and different forms of exercise in the same individuals will provide new insights about the key genes orchestrating the responses to altered energy demand and mechanical loading.</p>		

Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	Physical inactivity has become a pervasive problem in America that has lead to much greater costs, both in terms of individual human suffering from disease and in terms of the public health care costs associated with chronic diseases such as heart disease, diabetes, obesity, and frailty. Our study aims to uncover some of the root causes explaining how inactivity causes diseases so that better treatments become available. Furthermore, our study aims to compare the efficacy of different exercise treatments targeted toward specific biological defects.
Task Progress:	No progress report this period.
Bibliography Type:	Description: (Last Updated: 02/27/2004)