Fiscal Year:	FY 2009	**Task Last Updated:**	FY 09/08/2009
PI Name:	Smith, Scott M Ph.D.		
Project Title:	Characterization of Oxidative Damage During a Saturation Dive		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Biomedical countermeasures		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **HHC**:Human Health Countermeasures		
Human Research Program Risks:	None		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Organization Name:	NASA Johnson Space Center		
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City:	Houston	**State:**	TX
Zip Code:	77058-3607	**Congressional District:**	36
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	Directed Research
Start Date:	10/01/2008	**End Date:**	09/30/2010
No. of Post Docs:		**No. of PhD Degrees:**	
No. of PhD Candidates:		**No. of Master' Degrees:**	
No. of Master's Candidates:		**No. of Bachelor's Degrees:**	
No. of Bachelor's Candidates:		**Monitoring Center:**	NASA JSC
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Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Zwart, Sara (USRA/NASA Johnson Space Center) Jessup, J. Milburn (NIH/National Cancer Institute/Cancer Diagnosis Program)		
Grant/Contract No.:	Directed Research		
Performance Goal No.:			
Performance Goal Text:			
Task Description:	It is well understood that living in an environment with an increased partial pressure of oxygen will result in oxidative damage to the body – this is supported by our published data from NEEMO (NASA Extreme Environment Mission Operations) V, XII, and XIII saturation dive missions. Similar types of oxidative damage are evident after long-duration space flight. In this study, we propose to expand the number of markers of oxidative damage measured in the earlier NEEMO missions to better characterize observed effects, and to also include biomarkers suggested by the National Cancer Institute and other members of the NIH at a joint NCI/NASA workshop on oxidative damage assessment. Additionally, markers of folate status and metabolism will be evaluated because they were affected in earlier NEEMO and ISS crewmembers, possibly through a mechanism that relates to oxidative insult. Measurements will also include markers used to determine whether the increase in body iron storage during NEEMO missions is due to destruction of red blood cells, which would be a mechanism similar to what happens during space		

	flight. On the basis of numerous studies of subjects at different altitudes, we expect that neocytolysis occurs upon exposure to the increase in pressure; however, this has not been measured directly in the NEEMO model.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2009.
Bibliography Type:	Description: (Last Updated: 05/24/2023)