Fiscal Year:	FY 2004	**Task Last Updated:**	FY 03/31/2006
PI Name:	Pierson, Duane L Ph.D.		
Project Title:	Incidence of Latent Virus Shedding During Space Flight-DSO 493		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Operational and clinical research		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **HHC**:Human Health Countermeasures		
Human Research Program Risks:	(1) **Immune**:Risk of Adverse Health Event Due to Altered Immune Response		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	77058	**Congressional District:**	22
Comments:			
Project Type:	FLIGHT	**Solicitation / Funding Source:**	96-OLMSA-01
Start Date:	12/01/1997	**End Date:**	12/01/2004
No. of Post Docs:	0	**No. of PhD Degrees:**	
No. of PhD Candidates:	0	**No. of Master' Degrees:**	
No. of Master's Candidates:	0	**No. of Bachelor's Degrees:**	
No. of Bachelor's Candidates:	0	**Monitoring Center:**	NASA JSC
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Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):			
Grant/Contract No.:	None		
Performance Goal No.:			
Performance Goal Text:			
Task Description:	The reactivation of latent herpesviruses will increase health risks for crewmembers on ambitious long-duration NASA missions, such as those on the International Space Station and planetary exploration missions. Spaceflight conditions—stress and decreased cellular immunity—favor reactivation of herpesviruses. We previously reported that reactivation of Epstein-Barr virus (EBV) in crewmembers was associated with spaceflight. The number of copies of EBV DNA from saliva samples taken during space shuttle flights was about 10-fold higher than before and after spaceflight. These studies, performed on short-term spaceflights (~12 days), also supplied evidence that EBV reactivation progresses as the duration of flight increases. We have also shown increased reactivation and shedding of cytomegalovirus (CMV) in astronauts during flight. These conditions may increase the risk that the virus will be transmitted to crewmembers that do not have antibodies to it and could develop an active CMV infection. Recent data from our laboratory have shown reactivation of varicella-zoster herpesvirus (VZV) in astronauts during short-term spaceflights. Primary VZV infection		

	(chickenpox, or varicella) leads to latent infection in cranial nerves and dorsal root and autonomic ganglia, from which the virus can reactivate to produce shingles (zoster). VZV reactivation during spaceflight thus poses a significant health risk to crewmembers. VZV reactivation after orofacial surgery has been seen clinically as delayed facial palsy and detected in the laboratory as virus DNA in saliva or as an increased antibody response.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	Earth benefits: · Information gained from experiments performed on Space Shuttle missions will be essential for development of countermeasures for long-duration missions. · This molecular approach for monitoring viruses may be rapid and reliable tool for early detection of stress and diminished immunity. · This technology may provide clinically relevant data for management of patients suffering from chronic and acute stress. · Viral surveillance may lead to early intervention to minimize adverse health effects of acute/chronic stress.
Task Progress:	No progress report this period.
Bibliography Type:	Description: (Last Updated: 03/24/2020)