Fiscal Year:	FY 2019	**Task Last Updated:**	FY 01/24/2020
PI Name:	Poulet, Lucie Ph.D.		
Project Title:	Modeling Plant Growth and Gas Exchanges in Various Ventilation and Gravity Levels (Postdoctoral Fellow)		
Division Name:	Space Biology		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:			
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	None		
Human Research Program Risks:	None		
Space Biology Element:	(1) Plant Biology		
Space Biology Cross-Element Discipline:	(1) Developmental Biology		
Space Biology Special Category:	None		
PI Email:	lucie.poulet@nasa.gov	**Fax:**	FY
PI Organization Type:	NASA CENTER	**Phone:**	321-861-0713
Organization Name:	NASA Kennedy Space Center		
PI Address 1:	NASA Postdoctoral Fellow		
PI Address 2:	Space Station Processing Facility, 3018N, Mail Code: UB-A		
PI Web Page:			
City:	Kennedy Space Center	**State:**	AK
Zip Code:	32899	**Congressional District:**	8
Comments:			
Project Type:	GROUND	**Solicitation:**	NASA Postdoctoral Program
Start Date:	01/31/2019	**End Date:**	01/31/2021
No. of Post Docs:	1	**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 KSC
Contact Monitor:	Administration, USRA	**Contact Phone:**	
Contact Email:	npphelp@usra.edu		
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Massa, Gioia Ph.D. (MENTOR/ NASA Kennedy Space Center)		
Grant/Contract No.:	NASA Postdoctoral Program		
Performance Goal No.:			
Performance Goal Text:			
Task Description:	NASA Postdoctoral Program Fellow Human exploration of the deep solar system will necessitate plant growth for food production, which requires understanding plant growth in various gravity levels. The objectives of this project are predicting biomass production in different ventilation settings and defining the lowest adequate ventilation for optimal plant growth, by performing local studies of leaf gas exchanges. It will expand on results obtained in the past in parabolic flight and International Space Station (ISS) experiments, which have shown the effects of low ventilation and low gravity on gas exchanges at the leaf surface and photosynthesis. The methodology combines the development and validation of a mechanistic model of plant growth, computational fluid dynamics simulations, and experiments in different time frames. Expected results are to obtain a physically and biologically structured model of plant growth in reduced gravity environments, at least validated in Earth's conditions.		

Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2019.
Bibliography Type:	Description: (Last Updated:)