

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		
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		
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PI Organization Type:	NASA CENTER	Phone:	321-861-0713
Organization Name:	NASA Kennedy Space Center		
PI Address 1:	NASA Postdoctoral Fellow		
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PI Web Page:			
City:	Kennedy Space Center	State:	AK
Zip Code:	32899	Congressional District:	8
Comments:			
Project Type:	GROUND	Solicitation / Funding Source:	NASA Postdoctoral Program
Start Date:	01/31/2019	End Date:	01/31/2022
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:	NOTE: End date changed to 01/31/2022 per NASA-KSC; original date was 01/31/2021. (Ed. 12/01/21)		
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:	<p>NASA Postdoctoral Program Fellow</p> <p>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.</p>		

Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2019.
Bibliography Type:	Description: (Last Updated: 11/09/2023)