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| **Document Guidelines**   * Please make every attempt to write text in present tense where applicable. * **[IDRD]** indicates the field is required for the Increment Definition and Requirements Document Annex 5: Payload Tactical Plan, Table 3.0. * **[nasa.gov]** indicates the field appears on the website <http://www.nasa.gov/iss-science/>. * To check a box: double click > default value = checked > ok. * Submit completed form to: [jsc-iss-program-science-group@mail.nasa.gov](mailto:jsc-iss-program-science-group@mail.nasa.gov). |

**Investigation/Research Common Data**

**(Required for All Investigations)**

**Investigation Name [IDRD] [nasa.gov]:** Official acronym or short name of the investigation.

**Investigation Title [nasa.gov]:** Official title of the investigation.

**OpNom [IDRD]:** Approved OpNom name. If not approved, please put TBD.

**Principal Investigator:** If there are additional Principal Investigators, please copy, paste, and fill in for each Principal Investigator.

* **Name [nasa.gov]:**
* **Email:**
* **Phone [(###) ###-####]:**
* **Mailing Address:**
* **Credentials (M.D., Ph.D., M.S., etc.) [nasa.gov]:**
* **Institution [nasa.gov]:**
* **Investigator Location [nasa.gov]:** State or Country of the institution location
* **Institution Type:**

Academia

Government

Industry

Military

Nonprofit

Space Agency

**Co-Investigator/Collaborator:** If there are additional Co-Investigators/Collaborators, please copy, paste, and fill in for each Co-Investigator/Collaborator.

* **Name [nasa.gov]:**
* **Email:**
* **Phone [(###) ###-####]:**
* **Mailing Address:**
* **Credentials (M.D., Ph.D., M.S., etc.) [nasa.gov]:**
* **Institution [nasa.gov]:**
* **Investigator Location [nasa.gov]:** State or Country of the institution location
* **Institution Type:**

Academia

Government

Industry

Military

Nonprofit

Space Agency

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| **Person publically credited as source of this information** |  |
| **[nasa.gov]:** | **Name** |

**Contact:**

* **Primary Contact responsible for scientific content of this form:**
  + **Name:**
  + **Email:**
  + **Phone [(###) ###-####]:**
* **Secondary Contact**:
  + - **Name:**
    - **Email:**
    - **Phone [(###) ###-####]:**

**Developer(s) [nasa.gov]:** The space center, company or institution where the investigation and hardware are developed, city and state or city and country.

**Sponsoring Space Agency [IDRD] [nasa.gov]:** Space agency responsible for the implementation of the investigation.

Canadian Space Agency (CSA)

European Space Agency (ESA)

Japan Aerospace Exploration Agency (JAXA)

National Aeronautics and Space Administration (NASA)

Roscosmos

**Sponsoring Organization [nasa.gov]:** *NASA Investigations Only -* Official name of the NASA organization responsible for funding the investigation.

Human Exploration and Operations Mission Directorate (HEOMD)

Italian Space Agency (ASI)

National Laboratory (NL)

National Laboratory - Department of Defense (NL-DoD)

National Laboratory - Department of Energy (NL-DOE)

National Laboratory - National Institute of Standards and Technology (NL-NIST)

National Laboratory - National Institutes of Health (NL-NIH)

National Laboratory - National Science Foundation (NL-NSF)

National Laboratory - U.S. Agency for International Development (NL-USAID)

National Laboratory - U.S. Department of Agriculture (NL-USDA)

National Laboratory Education (NLE)

NASA Education (EDU)

Science Mission Directorate (SMD)

Technology Demonstration Office (TDO)

**Increment(s) [IDRD] [nasa.gov]:** (*Increment Specific*) A list of increments the investigation has been or will be performed on.

**Number of Investigations:** (*Increment Specific*) The number of investigations is usually one; however, for certain investigations this number may be larger. An investigation is defined as a set of activities and measurements (observations) designed to test a scientific hypothesis, related set of hypotheses, or set of technology validation objectives.

**PAO Summary (“Research Objectives” in IDRD) [IDRD] [nasa.gov]:** Short, concise description of the investigation (no more than 3 sentences) summarizing what research is being done and why. Information must be written on an 8th grade level. Information is used in reports for NASA Headquarters, Congress, Crew Briefings and Press Kits.

**Research Overview [nasa.gov]:** Bulleted list slightly more detailed than the PAO summary. The Research Overview is completed by answering the questions below as briefly as possible, and written on an 8th grade level. Information is used in the Research and Planning Working Group (RPWG) Planning process and Crew Briefings.

* Why is the research needed?
* What will be accomplished?
* What will be the impact of the research?

**Space Applications [nasa.gov]:** Information on how this investigation supports/benefits the space program.

**Earth Applications [nasa.gov]:** Information on how this investigation supports/benefits people on Earth.

**Category [IDRD] [nasa.gov]:** The investigation is classified within **one** research category.

**Subcategory [nasa.gov]:** The investigation is classified within **one** research subcategory.

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|  | **Biology and Biotechnology** | | |
|  |  | Animal Biology – Invertebrates | Microbiology |
|  |  | Animal Biology – Vertebrates | Microencapsulation |
|  |  | Cellular Biology | Plant Biology |
|  |  | Macromolecular Crystal Growth | Vaccine Development |

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|  | **Earth and Space Science** | | |
|  |  | Astrobiology | Earth Remote Sensing |
|  |  | Astrophysics | Heliophysics |

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|  | **Educational Activities and Outreach** | | |
|  |  | Classroom Versions of ISS Investigations | Educational Demonstrations |
|  |  | Commercial Demonstrations | Engineering Education |
|  |  | Cultural Activities | Student-Developed Investigations |
|  |  | Educational Competitions |  |

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|  | **Human Research** | | |
|  |  | Bone and Muscle Physiology | Immune System |
|  |  | Cardiovascular and Respiratory Systems | Integrated Physiology and Nutrition |
|  |  | Crew Healthcare Systems | Nervous and Vestibular Systems |
|  |  | Dental Health | Radiation Impacts on Humans |
|  |  | Human Behavior and Performance | Vision |
|  |  | Human Microbiome |  |

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|  | **Physical Science** | | |
|  |  | Combustion Science | Fundamental Physics |
|  |  | Complex Fluids | Materials Science |
|  |  | Fluid Physics |  |

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|  | **TBD: To Be Defined Based on Selected Science Objectives** |

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|  | **Technology Development and Demonstration** | | |
|  |  | Air, Water and Surface Monitoring | Power Generation/Distribution Systems |
|  |  | Avionics and Software | Propulsion Systems |
|  |  | Characterizing Experiment Hardware | Radiation Measurements and Shielding |
|  |  | Communications and Navigation | Repair and Fabrication Technologies |
|  |  | EVA Systems | Robotics |
|  |  | Fire Suppression and Detection | Small Satellites and Control Technologies |
|  |  | Food and Clothing Systems | Space Structures |
|  |  | Imaging Technology | Spacecraft and Orbital Environments |
|  |  | Life Support Systems and Habitation | Spacecraft Materials |
|  |  | Microbial Populations in Spacecraft | Thermal Management Systems |
|  |  | Microgravity Environment Measurement |  |

**Hardware Description [IDRD]:** (*Increment Specific*) Contains the name of the hardware item(s) used to perform the research and a brief description that indicates, in general terms, the hardware’s size and function.

**Unique Payload Constraints [IDRD]:** (*Increment Specific*) A brief description of the operational requirements and constraints needed to implement the investigation.

**Imagery [nasa.gov]:** Submit images, drawings, and graphical data separately in a high resolution .jpg format with the completed Investigation Summary Form. Image caption should have a detailed description of the image contents, activity occurring in the image, a NASA number if available, names of the individuals in the image, and image credit information. The primary image is used for communication projects. Images of the investigation on the ISS will be added following operation.

**Primary Image Caption:**

**Additional Image Caption 1:**

**Additional Image Caption 2:**

**Additional Image Caption 3:**

**Operations Location:** Indicates where the investigation is performed.

Ascent Only

Descent Only

ISS Internal

ISS External – Attached

ISS External – Deployed

Pre/Postflight

Sortie

**Brief Research Operations:** Brief bulleted summary of the operations and activities used to perform the investigation. Information is used in the Research and Planning Working Group (RPWG) Planning process and Crew Briefings. No more than 10 sentences.

**Previous Missions [nasa.gov]:** Missions that the investigation was manifested on, prior to ISS, or related investigations already completed on ISS.

**Additional Information and Publications**

**(Optional for non-US Sponsored Investigations)**

**Detailed Research Description [nasa.gov]:** Provides a place for a more technical description of the objectives of an investigation aimed at an interdisciplinary scientific audience. Several paragraphs may be used. Technical terminology should be defined to ensure readability. This field may also include a brief description of hardware.

**Operational Requirements [nasa.gov]:** Defines constraints and requirements necessary to complete the investigation (number of subjects or observations, spacing of observations, downlink of data, return of samples, etc.).

**Operational Protocols [nasa.gov]:** Descriptive overview of the investigation on orbit procedures.

**Educational Impact:**

Will this investigation involve students (K-12, Undergraduate, Graduate), teachers, or schools?

Yes  No

**Educational Activities:**

Defines educational activities associated with the investigation and a brief description of student involvement.

**Websites [nasa.gov]:** Listing of websites with information regarding the investigation.

**Related Investigations:** Other investigations that are currently or have flown on ISS that have similar objectives.

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| **Project Type:** *NASA Investigations Only* - Indicates the primary source of project funding. | | | | |
|  |  | CASIS Research Announcement | NASA Research Announcement | |
|  |  | Commercial | NASA Station Detailed Test Objective (SDTO) | |
|  |  | Government Agency (non-NASA) | NASA Supplemental Medical Objective (SMO) | |
|  |  | NASA Detailed Supplementary Objective (DSO) | Other |  |

**Grant Number:** If applicable, please provide the grant number.

**Publications**

**Related Previous Research Publications [nasa.gov]:** Citation listing of up to **5** publications which contain previous research used to develop the investigation. These publications should be a sample of the research previously done which has lead to this investigation.