

SOLICITED PROPOSAL APPLICATION FOR SPACE LIFE SCIENCES IN RESPONSE TO ANNOUNCEMENT NRA-99-HEDS-02	LEAVE BLANK
	NUMBER
	REVIEW GROUP
	DATE RECEIVED

PLEASE FOLLOW INSTRUCTIONS CAREFULLY

1. COMPLETE TITLE OF PROJECT

2. PRINCIPAL INVESTIGATOR/PROGRAM DIRECTOR (First, middle, and last name; degrees; position)

3. COMPLETE MAILING ADDRESS

Internal Mail Code or Location
 Office or Organization Division
 Agency/Center, Company, or Institution
 Street or P.O. Box
 City, State Zip Code

4. TELEPHONE NUMBER (area code, number, extension)	5. CONGRESSIONAL DISTRICT (U.S. ONLY)
FAX NUMBER E-MAIL ADDRESS	6. SOCIAL SECURITY # (U.S. ONLY)

7. THIS PROPOSAL IS: NEW RENEWAL REVISED

8. HAS THIS PROPOSAL (OR SIMILAR REQUEST) BEEN SUBMITTED TO ANY OTHER AGENCY?
 No Yes IF YES, SPECIFY AGENCY AND YEAR SUBMITTED:

9. HUMAN SUBJECTS 9a. <input type="checkbox"/> No <input type="checkbox"/> Yes 9b. Exemption # or IRB Approval Date: 9c. Assurance of Compliance #:	10. VERTEBRATE ANIMALS 10a. <input type="checkbox"/> No <input type="checkbox"/> Yes 10b. ACUC Approval Date: 10c. PHS Animal Welfare Assurance #:
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11. CO-INVESTIGATORS (First, middle, and last name; degrees)

12. CO-INVESTIGATOR'S ORGANIZATION

13. DATES OF ENTIRE PROPOSED PROJECT PERIOD From: _____ Through: _____	14. COSTS REQUESTED FOR FIRST 12-MONTH BUDGET PERIOD 14a. Direct Costs 14b. Total Costs	15. COSTS REQUESTED FOR ENTIRE PROPOSED PROJECT PERIOD 15a. Direct Costs 15b. Total Costs
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16. APPLICANT ORGANIZATION (Organization Name)

17. TYPE OF ORGANIZATION (U.S. ONLY)

Non Profit For Profit (General) For Profit (Small Business) Public, Specify: Federal State Local

18. ORGANIZATION OFFICIAL TO BE NOTIFIED IF AN AWARD IS MADE (Name, title, address, and telephone number)	19. OFFICIAL SIGNING FOR APPLICANT ORGANIZATION (Name, title, and telephone number)
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20. PRINCIPAL INVESTIGATOR/PROGRAM DIRECTOR ASSURANCE: I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if a grant is awarded as a result of this application. Willful provision of false information is a criminal offense (U.S. Code, Title 18, Section 1001).	SIGNATURE OF PERSON NAMED IN 2 (In ink; "Per" signature not acceptable.) <div style="border: 1px solid black; width: 100%; height: 20px; text-align: right; padding: 2px;">DATE</div>
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21. CERTIFICATION AND ACCEPTANCE: By submitting the proposal identified in this Cover Sheet/Proposal Summary in response to NRA 99-HEDS-02, the Authorizing Official of the proposing institution (or the individual proposer if there is no proposing institution): 1) certifies that the statements made in this proposal are true and complete to the best of his/her knowledge; 2) agrees to accept the obligations to comply with the sponsoring agency award terms and conditions if an award is made as a result of this proposal; and 3) if the applicant organization is an entity of the United States of America, confirms compliance with all provisions, rules, and stipulations set forth in the three Certifications contained in this NRA [namely, i) Certification Regarding Debarment, Suspension, and Other Responsibility Matters Primary Cover Transactions, ii) Certification Regarding Lobbying, and iii) Certification of Compliance with the NASA Regulations Pursuant to Nondiscrimination in Federally Assisted Programs]. Willful provision of false information in this proposal and/or its supporting documents, or in reports required under an ensuing award, is a criminal offense (U.S. Code, Title 18, Section 1001).	SIGNATURE OF PERSON NAMED IN 19 (or person named in 2, if there is no proposing institution) (In ink; "Per" signature not acceptable.) <div style="border: 1px solid black; width: 100%; height: 20px; text-align: right; padding: 2px;">DATE</div>
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PROPOSAL ABSTRACT

Principal Investigator:

Co-Investigators:

Proposal Title:

Ground-Based Research

OR

Space-Flight Experiment

Abstract

Prepare a brief description of the application stating the broad, long-term objectives and specific aims of the proposed work. Describe concisely the research design and methods for achieving these objectives and aims. This abstract is meant to serve as a succinct and accurate description of the proposed work when separated from this application. Limit abstract to 300 words or fewer.

Research Emphasis:

Check the box next to the research emphasis that is most closely aligned with your proposal.

Gravitational Biology and Ecology Program

- Molecular Structures and Physical Interactions...
- Developmental Biology
- Cellular and Molecular Biology
- Organismal and Comparative Biology
- Gravitational Ecology
- Other

SPACE FLIGHT EXPERIMENT REQUIREMENTS SUMMARY

In addition to the actual proposal, Form C is required for the Flight Feasibility Review. This form has been designed to enable you to describe the pre-flight, in-flight and post-flight components of your flight experiment. Form C consists of three sections: (I) a general section to be completed for all flight proposals, (II) a section to be completed only for experiments that require human subjects, and (III) a section to be completed only for experiments that require non-human specimens. If an experiment requires both human and non-human specimens, the entire form must be completed. If no specimens are required (e.g., radiation dosimetry), complete Part 1 and other applicable hardware and procedures questions (13, 14, 18-21). If your proposal consists of distinct segments with different requirements, fill out multiple forms to fully describe your needs. **Form C is mandatory for flight experiments.** Flight experiment proposals submitted without Form C completed will not be evaluated.

Part I: General Information (expand table length as necessary)

Do not write in this space.
For technical review use only.

1. Principal Investigator Name		PROPOSAL #
2. Proposal Title		
3. Duration of Flight Experiment		SHUTTLE/ISS
Minimum # of Days	Maximum # of Days	
4. Describe the types of procedures required for the in-flight portion of your experiment. List each type of procedure separately (e.g., blood sample, record EKG, fix culture, etc.).		FO

Requirements Summary for all flight experiments

5. Storage of equipment and supplies other than animal/plant/specimen habitats	Yes, No N/A Don't Know	Temperature & Estimated Volume (cc³)	MLE & TEMP	POWER
Is temperature control of equipment/supplies needed:				
-- for launch – what temperature, what volume?				
-- in-flight –what temperature, what volume?				
-- for return – what temperature, what volume?				
6. Experiment Loading/Unloading			ACCESS	
Is loading of your experiment or supplies required to be closer to launch than 90 hours?				
Is removal of your experiment sooner than 24 hours after landing required?				

Do not write in this space.

For technical review use only.

Hazardous Materials and Controlled/Radioactive Substances

7. Material	Estimated Volume	Time Period of Use (Preflight, In-flight, Post-flight)	HAZMAT

Part II: Research Involving Crew as Subjects (expand table length as necessary)

Mission Duration

8. Flight Experiment Duration	"N" required for statistical significance	Are In-flight Procedures Needed YES/NO	Are Pre- and Post-flight Procedures Needed YES/NO	CREW
11 days – Shuttle Crew				
> 11 days – ISS Crew				

Human Subject Restrictions

9. List all subject restrictions (e.g. specific dietary regimens, fluid intake regulation, work/rest cycles, exercise, etc.). Indicate the impact on scientific outcome if not met.

Preflight Training of Flight Crew as Subjects

10. What procedures will the crew need to learn to perform in their role as subject for your experiment? List each procedure separately.	Is it easy to learn the procedure? Rate from 1=easy to 10=difficult.	When will the crew first use the procedure? Preflight, In-flight, Post-flight	CREW TRAINING

Preflight Training of Flight Crew as Operators

11. If your experiment needs to have an operator assist the subject with data collection, what procedures will be performed by the operator? List each procedure separately.	Is it easy to learn the procedure? Rate from 1=easy to 10=difficult.	When will the crew first use the procedure? Preflight, In-flight, Post-flight	CREW TRAINING

Equipment for Human Subject Measurements

Do not write in this space.
For technical review use only.

Preflight/Post-flight

12. What variable will be measured?	Equipment Needed for Measurement	GSE

In-flight

13. What variable will be measured?	List ALL equipment needed inflight for measurement, sample collection, or storage for your experiment.	FLIGHT HARDWARE

Special Handling Requirements

14. List special requirements for specimen and/or sample accommodation or manipulation.

Crew Subject Procedures

Preflight/Post-flight Data Collection

15. Indicate each procedure that must be performed on the subject to meet your experiment objectives.	Timeframe Example: Launch-60 days (+/- 5 days)	Procedure Duration (minutes)	BDC/PDC

In-flight Operations

16. Indicate each procedure that must be performed on the subject to meet your experiment objectives.	Timeframe Example: Launch-60 days (+/- 5 days)	Procedure Duration (minutes)	CREW TIME

PART III: Research Involving Non-human Specimens (expand table length as necessary)

Do not write in this space.

Non-human Specimen Requirements

For technical review use only.

17. Specimen Type (species, strain, gender, weight, age)	Drugs, Tracers, Tags, etc.	"N" for-Flight Experiment	"N" for Ground Control of Flight Experiment	SPECIMEN

Use the table below to list in-flight experimental conditions for non-human specimens/samples.

18. Requirement (e.g., temperature, humidity, CO ₂ , light level, atmospheric pressure, etc.)	Tolerance (e.g. ± 1°C)	When needed? (e.g., Flight Day "X-Y," mission duration, pre-injection, after fixation, etc.)	Specimen / Sample	SPECIFICATION

19. Describe your method for delaying experiment activation until it is installed on ISS.	ACTIVATION
20. Describe your method for preserving your samples for up to 90 days on ISS.	STORAGE

Experiment Operations

Preflight Training of Flight Crew as Operators

21. What procedures must be taught to the crew for them to conduct your experiment? List each procedure separately.	Is it easy to learn the procedure? Rate from 1=easy to 10=difficult.	When will the crew first use the procedure? Preflight, In-flight, Post-flight	CREW TRAINING

In-flight Experiment Operations

List procedures the crew must perform in-flight to conduct your experiment. Indicate if the procedure is flight day and/or time sensitive, the frequency when it must occur, and an acceptable tolerance (e.g. +/- 4 hours).

22. Procedure – on what flight day and time (if required)? (e.g., change media every 5 days ± 1 day, fix sample on day 10 ± 6 hours, etc.)	Frequency	Tolerance	CREW TIME

Do not write in this space.
For technical review use only.

Specimen Habitat/Specimen Accommodation

23. List preferred habitat or indicate NO PREFERENCE.	MLE/FLIGHT HARDWARE

Experiment In-flight Equipment, Tools, Supplies

24. List equipment, tools, supplies needed for in-flight experiment procedures.	MLE/FLIGHT HARDWARE

Special Handling Requirements

25. List any special requirements for specimen and/or sample accommodation or manipulation.	

Principal Investigator:

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel.
Photocopy this page or follow this format for each person.

NAME	POSITION TITLE
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EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training).

INSTITUTION(S) AND LOCATION	DEGREE(S) (if applicable)	YEAR(S)	FIELD(S) OF STUDY

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications. **DO NOT EXCEED TWO PAGES.**

OTHER SUPPORT

On a separate page, please provide information regarding specific sources of other support for the principal investigator and each co-investigator (not consultants). The information should be provided separately for each individual in the format shown below. Please list all active support for an individual before listing pending support. Include the label "Form E" and the principal investigator's name at the top of each page and number pages consecutively.

NAME OF INDIVIDUAL		
ACTIVE/PENDING		
Project Number (Principal Investigator)	Dates of Approved/Proposed Project	Percent Effort
Source	Annual Direct Costs	
Title of Project (or Subproject)		
One sentence description of project goals. (The major goals of this project are...)		
Brief description of potential scientific or commitment overlap with respect to this individual between this application and projects described above(summarized for each individual).		

Principal Investigator/Program Director:

DETAILED BUDGET FOR 12-MONTH BUDGET PERIOD DIRECT COSTS ONLY		FROM	THROUGH		
Duplicate this form for each year of grant support requested					
PERSONNEL (Applicant Organization Only)		FUNDING AMOUNT REQUESTED			
NAME	ROLE IN PROJECT	EFFORT ON PROJECT	SALARY	FRINGE BENEFITS	TOTALS
	Principal Investigator				
SUBTOTALS →					
SUBCONTRACTS					
CONSULTANT COSTS					
EQUIPMENT (Itemize, use additional sheet if needed)					
SUPPLIES (Itemize by category, use additional sheet if needed)					
TRAVEL	DOMESTIC				
	NON-DOMESTIC				
OTHER EXPENSES (Itemize by category, use additional sheet if needed)					
TOTAL DIRECT COSTS FOR FIRST 12-MONTH BUDGET PERIOD (Item 14a, Form A)					
INDIRECT COSTS FOR FIRST 12-MONTH BUDGET PERIOD					
TOTAL COST FOR FIRST 12-MONTH BUDGET PERIOD (Item 14b, Form A)					

Principal Investigator/Program Director:

DETAILED BUDGET FOR 12-MONTH BUDGET PERIOD DIRECT COSTS ONLY		FROM	THROUGH		
Duplicate this form for each year of grant support requested					
PERSONNEL (Applicant Organization Only)		FUNDING AMOUNT REQUESTED			
NAME	ROLE IN PROJECT	EFFORT ON PROJECT	SALARY	FRINGE BENEFITS	TOTALS
	Principal Investigator				
SUBTOTALS →					
SUBCONTRACTS					
CONSULTANT COSTS					
EQUIPMENT (Itemize, use additional sheet if needed)					
SUPPLIES (Itemize by category, use additional sheet if needed)					
TRAVEL	DOMESTIC				
	NON-DOMESTIC				
OTHER EXPENSES (Itemize by category, use additional sheet if needed)					
TOTAL DIRECT COSTS FOR FIRST 12-MONTH BUDGET PERIOD (Item 14a, Form A)					
INDIRECT COSTS FOR FIRST 12-MONTH BUDGET PERIOD					
TOTAL COST FOR FIRST 12-MONTH BUDGET PERIOD (Item 14b, Form A)					

Principal Investigator/Program Director:

DETAILED BUDGET FOR 12-MONTH BUDGET PERIOD DIRECT COSTS ONLY		FROM	THROUGH		
Duplicate this form for each year of grant support requested					
PERSONNEL (Applicant Organization Only)		FUNDING AMOUNT REQUESTED			
NAME	ROLE IN PROJECT	EFFORT ON PROJECT	SALARY	FRINGE BENEFITS	TOTALS
	Principal Investigator				
SUBTOTALS →					
SUBCONTRACTS					
CONSULTANT COSTS					
EQUIPMENT (Itemize, use additional sheet if needed)					
SUPPLIES (Itemize by category, use additional sheet if needed)					
TRAVEL	DOMESTIC				
	NON-DOMESTIC				
OTHER EXPENSES (Itemize by category, use additional sheet if needed)					
TOTAL DIRECT COSTS FOR FIRST 12-MONTH BUDGET PERIOD (Item 14a, Form A)					
INDIRECT COSTS FOR FIRST 12-MONTH BUDGET PERIOD					
TOTAL COST FOR FIRST 12-MONTH BUDGET PERIOD (Item 14b, Form A)					

Principal Investigator/Program Director:

BUDGET FOR ENTIRE PROJECT PERIOD DIRECT COSTS ONLY				
BUDGET CATEGORY TOTALS		1st BUDGET PERIOD	ADDITIONAL YEARS OF SUPPORT REQUESTED	
			2nd	3rd
PERSONNEL (Salary and Fringe Benefits) (Applicant organization only)				
SUBCONTRACTS				
CONSULTANT COSTS				
EQUIPMENT				
SUPPLIES				
TRAVEL	DOMESTIC			
	NON-DOMESTIC			
OTHER EXPENSES				
TOTAL DIRECT COSTS FOR EACH PERIOD				
TOTAL INDIRECT COSTS FOR EACH PERIOD				
TOTAL DIRECT + INDIRECT COSTS FOR EACH PERIOD				
TOTAL DIRECT + INDIRECT COSTS FOR ENTIRE PROJECT				

JUSTIFICATION FOR UNUSUAL EXPENSES (Detail Justification in Cost Section of Proposal)



CHECKLIST FOR PROPOSERS

This checklist should be annotated to indicate that the stated items have been included in the proposal package.

Principal Investigator/Program Director:

- | | |
|---|---|
| <input type="checkbox"/> Form A: Solicited Proposal Application* | <input type="checkbox"/> Form E: Other Support |
| <input type="checkbox"/> Form B: Proposal Abstract | <input type="checkbox"/> Facilities and Equipment Description |
| <input type="checkbox"/> Title Page | <input type="checkbox"/> IRB or ACUC letter/form (if applicable)* |
| <input type="checkbox"/> Project Description | <input type="checkbox"/> Form F: Detailed 12 Month Budget (1 st year of support) |
| <input type="checkbox"/> Form C: Space Flight Experiment Requirements Summary (if applicable) | <input type="checkbox"/> Form G: Summary Budget Form |
| <input type="checkbox"/> Management Approach | <input type="checkbox"/> Supporting Budgetary Information |
| <input type="checkbox"/> Letter of Assurance of Foreign Support (if applicable) | <input type="checkbox"/> Appendices, if any |
| <input type="checkbox"/> Form D: Biographical Sketches | <input type="checkbox"/> 25 copies of all material listed above |

* One signed original required

Only one copy of the following needs to be submitted:

- 3.5 inch computer diskette
- Form H: This checklist indicates all applicable items have been enclosed.

**CERTIFICATION REGARDING
DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS
PRIMARY COVERED TRANSACTIONS**

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 14 CFR Part 1269.

A. The applicant certifies that it and its principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three-year period preceding this application been convicted or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or Local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or Local) with commission of any of the offenses enumerated in paragraph A.(b) of this certification; and
- (d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or Local) terminated for cause or default; and

B. Where the applicant is unable to certify to any of the statements in this certification, he or she shall attach an explanation to this application.

C. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lowered Tier Covered Transactions (Subgrants or Subcontracts)

- (a) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principles is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department of agency.
- (b) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

This page has been included for your information. Do not submit this page with your application. Item 21 of Form A satisfies the requirement of compliance with the provisions, rules, and stipulations described on this page.

**CERTIFICATION REGARDING
LOBBYING**

As required by S 1352 Title 31 of the U.S. Code for persons entering into a grant or cooperative agreement over \$100,000, the applicant certifies that:

(a) No Federal appropriated funds have been paid or will be paid by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, in connection with making of any Federal grant, the entering into of any cooperative, and the extension, continuation, renewal, amendment, or modification of any Federal grant or cooperative agreement;

(b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting an officer or employee of any agency, Member of Congress, an or an employee of a Member of Congress in connection with this Federal grant or cooperative agreement, the undersigned shall complete Standard Form - LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(c) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subgrants, contracts under grants and cooperative agreements, and subcontracts), and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by S1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

This page has been included for your information. Do not submit this page with your application. Item 21 of Form A satisfies the requirement of compliance with the provisions, rules, and stipulations described on this page.

**CERTIFICATION OF COMPLIANCE WITH THE NASA REGULATIONS PURSUANT TO
NONDISCRIMINATION IN FEDERALLY ASSISTED PROGRAMS**

The (Institution, corporation, firm, or other organization on whose behalf this assurance is signed, hereinafter called "Applicant") hereby agrees that it will comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352), Title IX of the Education Amendments of 1962 (20 U.S. 1680 et seq.), Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S. 794), and the Age Discrimination Act of 1975 (42 U.S. 16101 et seq.), and all requirements imposed by or pursuant to the Regulation of the National Aeronautics and Space Administration (14 CFR Part 1250) (hereinafter called "NASA") issued pursuant to these laws, to the end that in accordance with these laws and regulations, no person in the United States shall, on the basis of race, color, national origin, sex, handicapped condition, or age be excluded from participating in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Applicant receives federal financial assistance from NASA; and hereby give assurance that it will immediately take any measure necessary to effectuate this agreement.

If any real property or structure thereon is provided or improved with the aid of federal financial assistance extended to the Applicant by NASA, this assurance shall obligate the Applicant, or in the case of any transfer of such property, any transferee, for the period during which the real property or structure is used for a purpose for which the federal financial assistance is extended or for another purpose involving the provision of similar services or benefits. If any personal property is so provided, this assurance shall obligate the Applicant for the period during which the federal financial assistance is extended to it by NASA.

This assurance is given in consideration of and for the purpose of obtaining any and all federal grants, loans, contracts, property, discounts, or other federal financial assistance extended after the date hereof to the Applicant by NASA, including installment payments after such date on account of applications for federal financial assistance which were approved before such date. The Applicant recognized and agrees that such federal financial assistance will be extended in reliance on the representations and agreements made in this assurance, and the United States shall have the right to seek judicial enforcement of this assurance. His assurance is binding on the Applicant, its successors, transferees, and assignees, and the person or persons whose signatures appear below are authorized to sign on behalf of the Applicant.

This page has been included for your information. Do not submit this page with your application. Item 21 of Form A satisfies the requirement of compliance with the provisions, rules, and stipulations described on this page.