NONREIMBURSABLE SPACE ACT AGREEMENT
BETWEEN
ARIZONA STATE UNIVERSITY
AND
NASA
FOR
SPACEFLIGHT AS A NOVEL ENABLING RESEARCH PLATFORM FOR INNOVATIVE VACCINE DEVELOPMENT

ARTICLE 1. AUTHORITY AND PARTIES

In accordance with The National Aeronautics and Space Act, as amended (51 U.S.C. 20113(e)), this Agreement is entered into by the NASA National Aeronautics and Space Administration located at 300 E Street SW, Washington, DC 20546 (hereinafter referred to as "NASA HQ," "HQ," or "NASA") and Arizona Board of Regents, acting for and on behalf of Arizona State University, located at 1001 S. McAllister Ave., P.O. Box 875401, Tempe, AZ 85287, (hereinafter referred to as "ASU" or "PARTNER"). NASA and Partner may be individually referred to as a "Party" and collectively referred to as the "Parties."

ARTICLE 2. PURPOSE

NASA is operating a share of the U.S. accommodations of the International Space Station (ISS) as a national laboratory in accordance with the NASA Authorization Act of 2005. To fulfill this mandate, NASA released an announcement entitled the "OPPORTUNITY FOR THE USE OF THE INTERNATIONAL SPACE STATION BY DOMESTIC ENTITIES OTHER THAN U.S. FEDERAL GOVERNMENT AGENCIES".

Arizona State University responded to that announcement with a proposal to utilize the ISS to facilitate the design and development of next generation vaccines with improved efficacy and protective immune responses while minimizing reactogenicity. The investigators propose achieving these goals by: 1) providing novel gene targets for vaccine improvement and development; and 2) re-formulating existing vaccines. The researchers' previous experiments provide a solid basis of evidence that spaceflight can provide a means to confer enhanced protection/ immunogenicity on a recombinant attenuated Salmonella vaccine (RASV) strain carrying protective antigens against pneumococcal pneumonia–which causes more than 2 million annual fatalities worldwide.

ARTICLE 3. RESPONSIBILITIES

A. ASU will use reasonable efforts to:

1. Conduct experiments initially focusing on development of vaccines through the use of spaceflight to identify novel gene targets.

2. Conduct all flight research and development in accordance with NASA payload requirements.
3. Provide NASA with Operational Reports on all payloads flown under this agreement.
4. Provide NASA with Findings Reports on the findings from the research and development conducted with payloads flown under this agreement.

NASA will use reasonable efforts to:

1. Provide flight opportunities for experiments.
2. Provide appropriate transport and on-orbit resources (power, crew time, cold stowage, etc.) to allow for the flight experiments to be conducted.

ARTICLE 4. SCHEDULE AND MILESTONES

The planned major milestones for the activities defined in the "Responsibilities" clause are as follows:

1. Operational Reports - shall consist of hardware performance during operations while conducting the research. It will include details such as anomalies and functional performance to the plans.	30 days from completion of flight experiment
2. Findings Reports - shall consist or contain information to report on the results of the research and the analysis of the samples.	365 days from completion of flight experiment

ARTICLE 5. FINANCIAL OBLIGATIONS

There will be no transfer of funds or other financial obligations between the Parties under this Agreement and each Party will fund its own participation. All activities under or pursuant to this Agreement are subject to the availability of funds, and no provision of this Agreement shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, Title 31 U.S.C. § 1341.

ARTICLE 6. PRIORITY OF USE

Any schedule or milestone in this Agreement is estimated based upon the Parties' current understanding of the projected availability of NASA personnel, facilities and equipment. In the event that NASA's projected availability changes, Partner shall be given reasonable notice of that change, so that the schedule and milestones may be adjusted accordingly. The Parties agree that NASA usage of the facilities, equipment, and personnel shall have priority over the usage planned in this Agreement. Should a conflict arise, NASA in its sole discretion shall determine whether to exercise that priority. Likewise, should a conflict arise as between two commercial users, NASA, in its sole discretion, shall

determine the priority as between the two users. This Agreement does not obligate NASA to seek alternative government property or services under the jurisdiction of NASA at other locations.

ARTICLE 7. NONEXCLUSIVITY

This Agreement is not exclusive; accordingly, NASA may enter into similar Agreements for the same or similar purpose with other U.S. private or public entities.

ARTICLE 8. LIABILITY AND RISK OF LOSS

1. The objective of this Article is to establish a cross-waiver of liability in the interest of encouraging participation in the exploration, exploitation, and use of outer space through the International Space Station (ISS). The Parties intend that the cross-waiver of liability be broadly construed to achieve this objective.
2. For the purposes of this Article:
a. The term "Damage" means:
(i) Bodily injury to, or other impairment of health of, or death of, any person; (ii) Damage to, loss of, or loss of use of any property;
(iii) Loss of revenue or profits; or
(iv) Other direct, indirect, or consequential Damage.
b. The term "Launch Vehicle" means an object, or any part thereof, intended for launch, launched from Earth, or returning to Earth which carries Payloads, persons, or both.
c. The term "Partner State" includes each Contracting Party for which the Agreement Among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America concerning Cooperation on the Civil International Space Station (IGA) has entered into force, pursuant to Article 25 of the IGA or pursuant to any successor agreement. A Partner State includes its Cooperating Agency. It also includes any entity specified in the Memorandum of Understanding (MOU) between NASA and the Government of Japan to assist the Government of Japan's Cooperating Agency in the implementation of that MOU.
d. The term "Payload" means all property to be flown or used on or in a Launch Vehicle or the ISS.
e. The term "Protected Space Operations" means all Launch Vehicle or Transfer Vehicle activities, ISS activities, and Payload activities on Earth, in outer space, or in transit between Earth and outer space in implementation of this Agreement, the IGA, MOUs concluded pursuant to the IGA, and implementing arrangements. It includes, but is not limited to:
(i) Research, design, development, test, manufacture, assembly, integration, operation, or use of Launch Vehicles or Transfer Vehicles, the ISS, Payloads, or instruments, as well as related support equipment and facilities and services; and
(ii) All activities related to ground support, test, training, simulation, or guidance and control equipment and related facilities or services.
"Protected Space Operations" also includes all activities related to evolution of the ISS, as provided for in Article 14 of the IGA.

"Protected Space Operations" excludes activities on Earth which are conducted on return from the ISS to develop further a Payload's product or process for use other than for ISS-related activities in implementation of the IGA.
f. The term "Related Entity" means:
(i) A contractor or subcontractor of a Party or a Partner State at any tier;
(ii) A user or customer of a Party or a Partner State at any tier; or
(iii) A contractor or subcontractor of a user or customer of a Party or a Partner State at any tier.
The terms "contractor" and "subcontractor" include suppliers of any kind.
The term "Related Entity" may also apply to a State, or an agency or institution of a State, having the same relationship to a Partner State as described in paragraphs (2)(f)(i) through (2)(f)(iii) of this Article or otherwise engaged in the implementation of Protected Space Operations as defined in paragraph (2)(e) above.
g. The term "Transfer Vehicle" means any vehicle that operates in space and transfers Payloads or persons or both between two different space objects, between two different locations on the same space object, or between a space object and the surface of a celestial body. A Transfer Vehicle also includes a vehicle that departs from and returns to the same location on a space object.
3. Cross-waiver of liability:
a. Each Party agrees to a cross-waiver of liability pursuant to which each Party waives all claims against any of the entities or persons listed in paragraphs (3)(a)(i) through (3)(a)(iv) of this Article based on Damage arising out of Protected Space Operations. This cross-waiver shall apply only if the person, entity, or property causing the Damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations. The cross-waiver shall apply to any claims for Damage, whatever the legal basis for such claims, against:
(i) Another Party;
(ii) A Partner State other than the United States of America;
(iii) A Related Entity of any entity identified in paragraph (3)(a)(i) or (3)(a)(ii) of this Article; or
(iv) The employees of any of the entities identified in paragraphs (3)(a)(i) through (3)(a)(iii) of this Article.
b. In addition, each Party shall, by contract or otherwise, extend the cross-waiver of liability, as set forth in paragraph (3)(a) of this Article, to its Related Entities by requiring them, by contract or otherwise, to:
(i) Waive all claims against the entities or persons identified in paragraphs (3)(a)(i) through (3)(a)(iv) of this Article; and
(ii) Require that their Related Entities waive all claims against the entities or persons identified in paragraphs (3)(a)(i) through (3)(a)(iv) of this Article.
c. For avoidance of doubt, this cross-waiver of liability includes a cross-waiver of claims arising from the Convention on International Liability for Damage Caused by Space Objects, which entered into force on September 1, 1972, where the person, entity, or property causing the Damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations.

d. Notwithstanding the other provisions of this Article, this cross-waiver of liability shall not be applicable to:
(i) Claims between a Party and its own Related Entity or between its own Related Entities;
(ii) Claims made by a natural person, his/her estate, survivors or subrogees (except when a subrogee is a Party to this Agreement or is otherwise bound by the terms of this cross-waiver) for bodily injury to, or other impairment of health of, or death of, such person;
(iii) Claims for Damage caused by willful misconduct;
(iv) Intellectual property claims;
(v) Claims for Damage resulting from a failure of a Party to extend the cross-waiver of liability to its Related Entities, pursuant to paragraph (3)(b) of this Article; or
(vi) Claims by a Party arising out of or relating to another Party's failure to perform its obligations under this Agreement.
e. Nothing in this Article shall be construed to create the basis for a claim or suit where none would otherwise exist.

ARTICLE 9. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

1. General

(a) "Related Entity" as used in this Data Rights clause, means a contractor, subcontractor, grantee, or other entity having a legal relationship with NASA or Partner that is assigned, tasked, or contracted with to perform specified NASA or Partner activities under this Agreement.

(b) "Data," as used in this Data Rights clause, means recorded information, regardless of form, the media on which it may be recorded, or the method of recording. The term includes, but is not limited to, data of a scientific or technical nature, computer software and documentation thereof, and data comprising commercial and financial information.

(c) "Proprietary Data," as used in this Data Rights clause, means Data embodying trade secrets developed at private expense or comprising commercial or financial information that is privileged or confidential, and is marked with a suitable restrictive notice, provided that such Data: is not known or available from other sources without obligations concerning its confidentiality; has not been made available by the owners to others without obligation concerning its confidentiality; is not already available to the Government without obligation concerning its confidentiality; has not been developed independently by persons who have had no access to the information; and, is not required to be disclosed pursuant to Federal statute, law, regulation, or valid court order.

(d) The Data rights set forth herein are applicable to employees of Partner and employees of any Related Entity of Partner. Partner shall ensure that its employees and employees of any Related Entity that perform Partner activities under this Agreement are aware of the obligations under this clause and that all such employees are bound to such obligations.

(e) Data exchanged between NASA and Partner under this Agreement will be exchanged without restriction as to its disclosure, use, or duplication except as otherwise provided in this clause.

(f) No preexisting Proprietary Data will be exchanged between the Parties under this Agreement unless specifically authorized in this clause or in writing by the owner of the Proprietary Data.

(g) In the event that Data exchanged between NASA and Partner include a restrictive notice that NASA or Partner deems to be ambiguous or unauthorized, NASA or Partner may notify the other Party of such condition. Notwithstanding such a notification, as long as the restrictive notice provides an indication that a restriction on use or disclosure was intended, the Party receiving such Data will treat the Data pursuant to the requirements of this clause unless otherwise directed in writing by the Party providing such Data.

(h) Notwithstanding any restriction on use, disclosure, or reproduction of Data provided in this clause, the Parties will not be restricted in the use, disclosure, or reproduction of Data provided under this Agreement that:

(i) is publicly available at the time of disclosure or thereafter becomes publicly available without breach of this Agreement;

(ii) is known to, in the possession of, or developed by the receiving Party independent of carrying out the receiving Party's responsibilities under this Agreement and independent of any disclosure of, or without reference to, Proprietary Data or otherwise protectable Data hereunder;

(iii) is received from a third party having the right to disclose such information without restriction; or

(iv) is required to be produced or released by the receiving Party pursuant to a court order or other legal requirement.

(i) If either NASA or Partner believes that any of the events or conditions that remove restriction on the use, disclosure, or reproduction of the Data apply, NASA or Partner will promptly notify the other Party of such belief prior to acting on such belief, and, in any event, will notify the other Party prior to an unrestricted use, disclosure, or reproduction of such Data.

(j) Disclaimer of Liability: Notwithstanding any restriction on use, disclosure, or reproduction of Data provided in this clause, NASA will not be restricted in, nor incur any liability for, the use, disclosure, or reproduction of any Data not identified with a suitable restrictive notice in accordance with paragraphs 1 (c), 2 and 8 of this clause or of any Data included in Data which Partner has furnished, or is required to furnish to the U.S. Government without restriction on disclosure and use.

(k) Partner may use the following, or a similar, restrictive notice as required by paragraphs 1 (c), 2 and 8 of this clause. In addition to identifying Proprietary Data with such a restrictive notice, Partner should mark each page containing Proprietary Data with the following, or a similar, legend: "Proprietary Data – use and disclose only in accordance with notice on title or cover page."

Proprietary Data Notice

These data herein include [enter as applicable: "Background Data" or "Data Produced by Partner under a Space Act Agreement"] in accordance with the Data Rights provisions under Space Act Agreement [provide applicable identifying information] and embody Proprietary Data. In accordance with the Space Act Agreement, NASA will use reasonable efforts to maintain the data in confidence and limit use, disclosure, and

reproduction by NASA and any Related Entity of NASA in accordance with restrictions identified in the Space Act Agreement [may list specific restrictions listed in the Agreement].

2. Data First Produced by Partner Under this Agreement

In the event Data first produced by Partner in carrying out Partner responsibilities under this Agreement is furnished to NASA, and Partner considers such Data to be Proprietary Data, and such Data is identified with a suitable restrictive notice, NASA will use reasonable efforts to maintain the Data in confidence and such Data will be disclosed and used by or on behalf of the U.S. Government (under suitable protective conditions) only for U.S. Government purposes.

3. Data First Produced by NASA Under this Agreement

Except for data disclosing an invention owned by NASA for which patent protection is being considered, in the event Partner requests that Data first produced by NASA (or any Related Entity of NASA) in carrying out NASA's responsibilities under this Agreement be maintained in confidence, and to the extent NASA determines that such Data would be Proprietary Data if it had been obtained from Partner, NASA will mark such Data with a restrictive notice and will maintain such marked Data in confidence for a period of 1 year after development of the Data, with the express understanding that during the aforesaid restricted period such marked Data may be disclosed and used (under suitable protective conditions) by or on behalf of the U.S. Government for U.S. Government purposes only, and thereafter for any purpose whatsoever without restriction on disclosure and use. Partner agrees not to disclose such marked Data to any third party without NASA's written approval until the aforesaid restricted period expires.

4. Publication of Results

Recognizing that section 203 of the National Aeronautics and Space Act (51 U.S.C. § 20112(a)(3)), as amended, requires NASA to provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof, and that the dissemination of the results of NASA activities is one of the considerations for this Agreement, the Parties agree to coordinate proposed publication of results with each other in a manner that allows each Party a reasonable amount of time to review and comment on proposed publications.

5. Data Disclosing an Invention

In the event Data exchanged between NASA and Partner discloses an invention for which patent protection is being considered, the furnishing Party specifically identifies such Data, and the disclosure and use of such Data is not otherwise limited or restricted herein, the receiving Party agrees to withhold such Data from public disclosure for a reasonable time (presumed to be 1 year unless mutually agreed otherwise or unless such information is restricted for a longer period herein) in order for patent protection to be obtained.

6. Copyright

In the event Data is exchanged with a notice indicating that the Data is copyrighted and there is no indication that such Data is subject to restriction under paragraphs 2 or 3 of this clause (i.e., Data is not marked with a restrictive notice as required by paragraphs 2 or 3 of this clause), such Data will be presumed to be published and the following royalty-free licenses will apply.

(a) If it is indicated on the Data that the Data existed prior to, or was produced outside of, this Agreement, the receiving Party and others acting on its behalf, may reproduce, distribute, and prepare derivative works only for carrying out the receiving Party's responsibilities under this Agreement.

(b) If the Data does not contain the indication of (a) above, the Data will be presumed to have been first produced under this Agreement and, except as otherwise provided in paragraph 5 of this clause and in the Inventions and Patent Rights clause of this Agreement for protection of reported inventions, the receiving Party and others acting on its behalf may reproduce, distribute, and prepare derivative works for any purpose.

7. Data Subject to Export Control

Technical data, whether or not specifically identified or marked, that is subject to the export laws and regulations of the United States and that is provided to Partner under this Agreement will be treated as such, and will not be further provided to any foreign persons or transmitted outside the United States without proper U.S. Government authorization, where required.

8. Background Data

(a) In the event Partner furnishes NASA with Data developed at private expense (or in the case of state or local government, Data developed at government expense) that existed prior to, or was produced outside of, this Agreement, and such Data embody Proprietary Data, and such Data is so identified with a suitable restrictive notice, NASA will use reasonable efforts to maintain the Data in confidence and such Data will be disclosed and used by NASA and any Related Entity of NASA (under suitable protective conditions) only for carrying out NASA responsibilities under this Agreement. Upon completion of activities under this Agreement, such Data will be disposed of as requested by Partner.

(b) At the time of execution of this Agreement, the Parties agree that the following Background Data embodies Proprietary Data that will be provided to NASA: "Not Applicable"

9. Handling of Data

(a) In the performance of this Agreement, Partner and any Related Entity of Partner may have access to, be furnished with, or use the following categories of Data:

(i) Proprietary Data of third parties that the U.S. Government has agreed to handle under protective arrangements; and/or
(ii) U.S. Government Data, the use and dissemination of which, the U.S. Government intends to control.

(b) Data provided by NASA to Partner under the Agreement

(i) At the time of execution of this Agreement, the Parties agree that the following Proprietary Data of third parties will be provided to the Partner with the express understanding that Partner will use and protect such DATA in accordance with this clause: "None"

(ii) At the time of execution of this Agreement, the Parties agree that the following U.S. Government Data will be provided to Partner with the express understanding that Partner will use and protect such U.S. Government Data in accordance with this clause: "Not Applicable"

(iii) At the time of execution of this Agreement, the Parties agree that the following software and related Data will be provided to Partner under a separate Software Usage Agreement with the express understanding that Partner will use and protect such related Data in accordance with this clause. Unless retention of such Data is otherwise authorized under the Software Usage Agreement or Partner has entered into a license, consistent with 37 C.F.R. Part 404, for software provided under this Agreement, upon completion of activities under this Agreement, such related Data will be disposed of as instructed by NASA: "Not Applicable"

(c) With respect to such Data specifically identified in this Agreement or specifically marked with a restrictive notice, Partner agrees to:

(i) Use, disclose, or reproduce such Data only to the extent necessary to perform the work required under this Agreement;

(ii) Safeguard such Data from unauthorized use and disclosure;

(iii) Allow access to such Data only to its employees and any Related Entity that require access for their performance under this Agreement;

(iv) Except as otherwise indicated in (c)(iii) above, preclude access and disclosure of such Data outside Partner's organization;

(v) Notify its employees who may require access to such Data about the obligations under this clause and ensure that such employees comply with such obligations, and notify its Related Entity that may require access to such Data about their obligations under this clause; and

(vi) Return or dispose of such Data, as NASA may direct, when the Data is no longer needed for performance under this Agreement.

10. Oral and visual information

If information that Partner considers to be Proprietary Data is disclosed orally or visually to NASA, NASA will have no duty to limit or restrict, and will not incur any liability for, any disclosure or use of such information unless: (a) Partner orally informs NASA before initial disclosure that such information is considered to be Proprietary Data, and (b) Partner reduces such information to tangible, recorded form that is identified and marked with a suitable restrictive notice as required by paragraphs 1 (c), 2 and 8 above and furnishes the resulting Data to NASA within 10 days after such oral or visual disclosure.

11. Classified Material

In the event that access to, acquisition of, or delivery of classified material is required under this Agreement, the Partner must provide a completed Contract Security Classification Specification (DD Form 254 or equivalent) to the NASA Point of Contact identified herein. Transmission and access to classified material shall be in accordance with NASA and U.S Federal Government statutes, regulations, and policies.

ARTICLE 10. INTELLECTUAL PROPERTY RIGHTS - INVENTION AND PATENT RIGHTS

1. General

(a) "Related Entity" as used in this Invention and Patent Rights clause means a contractor, subcontractor, grantee, or other entity having a legal relationship with NASA or Partner that is assigned, tasked, or contracted with to perform specified NASA or Partner activities under this Agreement.

(b) Based on the purpose and scope of this Agreement, and the responsibilities of the Parties, NASA has made an administrative determination that the provisions of section 305(a) of the National Aeronautics and Space Act, as amended (51 U.S.C. § 20135(b)), do not apply to this Agreement. Therefore, title to inventions made (conceived or first actually reduced to practice) as a result of activities performed under this Agreement will remain with the respective inventing party(ies), and no invention or patent rights are exchanged between or granted by such parties under this Agreement except as provided herein.

(c) The invention and patent rights set forth herein are applicable to employees of Partner and employees of any Related Entity of Partner. Partner shall ensure that its employees and employees of any Related Entity that perform Partner activities under this Agreement are aware of the obligations under this clause and that all such employees are bound to such obligations.

2. NASA Inventions

Upon request, NASA will use reasonable efforts to grant Partner, consistent with the requirements of 37 C.F.R. Part 404, a license on terms to be subsequently negotiated to any NASA invention made as a result of activities performed under this Agreement on which NASA decides to file a patent application. This license will be subject to the rights reserved in paragraph 5(a) below.

3. NASA Related Entity Inventions

In the event that inventions are made under this Agreement by employees of a NASA Related Entity or jointly between NASA employees and employees of a NASA Related Entity, and NASA has the right to acquire or has acquired title to such inventions, NASA will use reasonable efforts to report such inventions. Upon request, NASA will use

reasonable efforts to grant Partner, consistent with the requirements of 37 C.F.R. Part 404, a license on terms to be subsequently negotiated to any such invention on which NASA has acquired title and decides to file a patent application. This license will be subject to the rights reserved in paragraph 5(b) below.

4. Joint Inventions With Partner

NASA and Partner agree to use reasonable efforts to identify and report to each other, and to cooperate with each other in obtaining patent protection on, any inventions made jointly between NASA employees (or employees of a NASA Related Entity) and employees of Partner. Upon timely request, NASA may, at its sole discretion and subject to the applicable rights reserved in paragraph 5 below:

(a) agree to refrain from exercising its undivided interest in a manner inconsistent with Partner's commercial interests; or

(b) use reasonable efforts to grant Partner, consistent with the requirements of 37 C.F.R. Part 404, an exclusive or partially exclusive license on terms to be subsequently negotiated to NASA's undivided interest in such joint inventions.

5. Rights to be Reserved in Partner's License

Any license granted to Partner pursuant to paragraphs 2, 3, or 4 above will be subject to the reservation of the following rights:

(a) As to inventions made solely or jointly by NASA employees, NASA reserves the irrevocable, royalty free right of the Government of the United States to practice the invention or have the invention practiced on behalf of the United States or on behalf of any foreign government or international organization pursuant to any existing or future treaty or agreement with the United States.

(b) As to inventions made solely or jointly by employees of a NASA Related Entity, NASA reserves the rights as set forth in paragraph (a) above, as well as the revocable, nonexclusive, royalty-free license in the Related Entity as set forth in 14 C.F.R. § 1245.108 or 37 C.F.R. § 401.14 (e), as applicable.

6. Protection of Reported Inventions

When inventions are reported and disclosed between the Parties in accordance with the provisions of this clause, the receiving Party agrees to withhold such reports or disclosures from public access for a reasonable time (presumed to be 1 year unless otherwise mutually agreed or unless such information is restricted for a longer period herein) in order to facilitate the allocation and establishment of the invention and patent rights under these provisions.

7. Patent Filing Responsibilities and Costs

(a) The invention and patent rights set forth herein will apply to any patent application filed and any patent obtained covering an invention made as a result of the performance of activities under this Agreement. Each Party is responsible for its own costs of

obtaining and maintaining patents covering sole inventions of its employees; except that NASA and Partner may mutually agree otherwise, upon the reporting of any invention (sole or joint) or in any license granted, as to responsibilities and course of action to be taken to establish and maintain patent protection on such invention.

(b) Partner agrees to include the following statement in any patent application it files for an invention made jointly between NASA employees (or employees of a NASA Related Entity) and employees of Partner:

The invention described herein may be manufactured and used by or for the U.S. Government for U.S. Government purposes without the payment of royalties thereon or therefor.

8. Related Inventions

(a) For the purposes of this paragraph, a related invention is an invention related to the subject matter of this Agreement, but not made as a result of activities performed under this Agreement, that is covered by a patent application or patent owned by NASA or Partner. To the extent NASA related invention(s) are known and identified in paragraphs (b) or (d) below, upon request, and to the extent such related inventions are available for licensing, NASA may enter into negotiations with Partner for a license to such related invention(s) consistent with the requirements of 37 C.F.R. Part 404.

(b) At the time of execution of this Agreement, the Parties agree that the following inventions are related inventions:
[Fill in and indicate which party owns the related invention; if none, insert "None".

(c) Related Computer Software: Where a related invention in the form of computer software is provided by NASA to Partner, such software will be provided under a separate Software Usage Agreement. Partner agrees to maintain such software in confidence and use it only for carrying out Partner responsibilities under this Agreement. Unless Partner has entered into a license, consistent with 37 C.F.R. Part 404, for software provided under this Agreement, upon completion of activities under this Agreement, all copies of such software will be disposed of as instructed by NASA.

(d) At the time of execution of this Agreement, the Parties agree that the following software is related computer software that will be provided to Partner in accordance with paragraph (c) above:
[None]

ARTICLE 11. USE OF NASA NAME AND NASA EMBLEMS AND RELEASE OF GENERAL INFORMATION TO THE PUBLIC

1. NASA Name and Initials

Partner agrees the words "National Aeronautics and Space Administration" and the letters "NASA" will not be used in connection with a product or service in a manner reasonably calculated to convey any impression that such product or service has the authorization, support, sponsorship, or endorsement of NASA, which does not, in fact, exist. In addition, with the exception of release of general information in accordance with

paragraph 3 below, Partner agrees that any proposed public use of the NASA name or initials (including press releases resulting from activities conducted under this Agreement and all promotional and advertising use) shall be submitted by Partner in advance to the NASA Assistant Administrator for Public Affairs or designee ("NASA Public Affairs") for review and approval. Approval by NASA Public Affairs shall be based on applicable law and policy governing the use of the NASA name and initials.

2. NASA Emblems

Use of NASA emblems/devices (i.e., NASA Seal, NASA Insignia, NASA logotype, NASA Program Identifiers, and the NASA Flag) are governed by 14 C.F.R. Part 1221. Partner agrees that any proposed use of such emblems/devices shall be submitted for review and approval by NASA Public Affairs in accordance with such regulations.

3. Release of General Information to the Public

NASA or Partner may, consistent with Federal law and this Agreement, release general information regarding its own participation in this Agreement as desired.

ARTICLE 12. DISCLAIMER OF WARRANTY

Equipment, facilities, technical information, and services provided by NASA under this Agreement are provided "as is." NASA makes no express or implied warranty as to the condition of such equipment, facilities, technical information, or services, or as to the condition of any research or information generated under this Agreement, or as to any products made or developed under or as a result of this Agreement including as a result of the use of information generated hereunder, or as to the merchantability or fitness for a particular purpose of such research, information, or resulting product, or that the equipment, facilities, technical information, or services provided will accomplish the intended results or are safe for any purpose including the intended purpose, or that any of the above will not interfere with privately owned rights of others. Neither the government nor its contractors shall be liable for special, consequential or incidental damages attributed to such equipment, facilities, technical information, or services provided under this Agreement or such research, information, or resulting products made or developed under or as a result of this Agreement.

ARTICLE 13. DISCLAIMER OF ENDORSEMENT

NASA does not endorse or sponsor any commercial product, service, or activity. NASA's participation in this Agreement or supply of equipment, facilities, technical information, or services under this Agreement does not constitute endorsement by NASA. Partner agrees that nothing in this Agreement will be construed to imply that NASA authorizes, supports, endorses, or sponsors any product or service of Partner resulting from activities conducted under this Agreement, regardless of the fact that such product or service may employ NASA-developed technology.

ARTICLE 14. COMPLIANCE WITH LAWS AND REGULATIONS

The Parties shall comply with all applicable laws and regulations including, but not limited to, safety, security, export control, and environmental laws and regulations. Access by Partner to a NASA facilities or property, or to a NASA Information Technology (IT) system or application, is contingent upon compliance with NASA security and safety policies and guidelines including, but not limited to, standards on badging, credentials, and facility and IT system/application access.

With respect to any export control requirements:

(a) The Parties will comply with all U.S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, in performing work under this Agreement. In the absence of available license exemptions/exceptions, the Partner shall be responsible for obtaining the appropriate licenses or other approvals, if required, for exports of hardware, technical data and software, or for the provision of technical assistance.

(b) The Partner shall be responsible for obtaining export licenses, if required, before utilizing foreign persons in the performance of work under this Agreement, including instances where the work is to be performed on-site at NASA and where the foreign person will have access to export-controlled technical data or software.

(c) The Partner will be responsible for all regulatory record keeping requirements associated with the use of licenses and license exemptions or exceptions.

(d) The Partner will be responsible for ensuring that the provisions of this Article apply to its Related Entities.

ARTICLE 15. TERM OF AGREEMENT

This Agreement becomes effective upon the date of the last signature below and shall remain in effect until the completion of all obligations of both Parties hereto, or 4 years from the date of the last signature, whichever comes first.

ARTICLE 16. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Agreement by providing 30 calendar days written notice to the other Party.

ARTICLE 17. CONTINUING OBLIGATIONS

The rights and obligations of the Parties that, by their nature, would continue beyond the expiration or termination of this Agreement, e.g., "Liability and Risk of Loss" and

"Intellectual Property Rights" shall survive such expiration or termination of this Agreement.

ARTICLE 18. MANAGEMENT POINTS OF CONTACTS

The following personnel are designated as the principal points of contact between the Parties in the performance of this Agreement.

Technical Points of Contact

NASA National Aeronautics and Space Administration
Marybeth Edeen
Manager, National Lab Office
Mail Stop: OZ1
2101 Nasa Rd 1
Houston, TX 77058
Phone: 281-483-9122
Fax: 281-244-8292
marybeth.a.edeen@nasa.gov

Arizona State University
Cheryl A. Nickerson, Ph.D.
Associate Professor of Life Sciences,
School of Life Sciences
1001 S. McAllister Ave.
P.O. Box 875401
Tempe, AZ 85287
Phone: (480) 727-7520
Cheryl.Nickerson@asu.edu

Business/Administrative Points of Contact

NASA National Aeronautics and Space Administration
Jason Crusan
Chief Technologist for Space Operations
Mail Stop: 7N39
300 E Street SW
Washington, DC 20546
Phone: 202-358-0635
jason.crusan@nasa.gov

ARTICLE 19. DISPUTE RESOLUTION

Except as otherwise provided in the article entitled "Priority of Use," the article entitled "Intellectual Property Rights – Invention and Patent Rights" (for those activities governed by 37 C.F.R. Part 404), and those situations where a pre-existing statutory or regulatory system exists (e.g. under the Freedom of Information Act, 5 U.S.C. § 552), all disputes concerning questions of fact or law arising under this Agreement shall be referred by the claimant in writing to the appropriate person identified in this Agreement as the "Management Points of Contact." The persons identified as the "Management Points of Contact" for NASA and the Partner will consult and attempt to resolve all issues arising from the implementation of this Agreement. If they are unable to come to agreement on

any issue, the dispute will be referred to the signatories to this Agreement, or their designees, for joint resolution. If the Parties remain unable to resolve the dispute, then the NASA signatory or that person's designee, as applicable will issue a written decision that will be the final agency decision for the purpose of judicial review. Nothing in this section limits or prevents either Party from pursuing any other right or remedy available by law upon the issuance of the final agency decision.

ARTICLE 20. MODIFICATIONS

Any modification to this Agreement shall be executed, in writing, and signed by an authorized representative of NASA and the Partner. Any modification that creates an additional commitment of NASA resources must be signed by the original NASA signatory authority, or successor, or a higher level NASA official possessing original or delegated authority to make such a commitment.

ARTICLE 21. ASSIGNMENT

Neither this Agreement nor any interest arising under it will be assigned by the Partner or NASA without the express written consent of the officials executing this Agreement.

ARTICLE 22. APPLICABLE LAW

U.S. Federal law governs this Agreement for all purposes, including, but not limited to, determining the validity of the Agreement, the meaning of its provisions, and the rights, obligations and remedies of the Parties.

ARTICLE 23. INDEPENDENT RELATIONSHIP

This Agreement is not intended to constitute, create, give effect or otherwise recognize a joint venture, partnership, or formal business organization, or agency agreement of any kind, and the rights and obligations of the Parties shall be only those expressly set forth herein.

ARTICLE 24. SIGNATORY AUTHORITY

The signatories to this Agreement covenant and warrant that they have authority to execute this Agreement. By signing below, the undersigned agrees to the above terms and conditions.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

BY: William H Gerstenmaier

William H. Gerstenmaier
Associate Administrator
for Space Operations
Mail Suite: 7K39
300 E Street SW
Washington, DC 20546

DATE: 27 April 2011

ARIZONA STATE UNIVERSITY

BY: _____

Alan Nelson, Ph.D.
Executive Director
1001 S. McAllister Ave.
P.O. Box 875401
Tempe, AZ 85287
Phone: 480-965-6671
alan.nelson@asu.edu

DATE: May 17, 2011

ARIZONA STATE UNIVERSITY
AUTHORIZED REPRESENTATIVE:

Heather Clark
Assistant Director
Research Administration
Arizona State University

5/17/2011