

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER
AND UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
FOR MICROGREENS RESEARCH

ARTICLE 1. AUTHORITY AND PARTIES

The National Aeronautics and Space Administration John F. Kennedy Space Center, located at Kennedy Space Center, FL 32899 (hereinafter referred to as "NASA" or "NASA KSC") enters into this Agreement in accordance with 51 U.S.C. § 20113(e). The United States Department of Agriculture, Agricultural Research Service, located at 1400 Independence Ave., S.W., Washington, DC 20250-0001 (hereinafter referred to as "USDA-ARS"), enters into this Agreement in accordance with 7 U.S.C. § 3318 (b). NASA and USDA-ARS may be individually referred to as a "Party" and collectively referred to as the "Parties."

ARTICLE 2. PURPOSE

NASA KSC and USDA-ARS will conduct collaborative research to develop protocols and approaches for growing microgreen plant species. Each agency will provide support for its own postdoctoral fellows to carry out the research. Research will focus on controlled environment approaches for optimizing growth and nutritional value of microgreen crops. Findings will be used to develop concepts for possible production and testing of microgreens in space, as well as optimizing their growth for terrestrial production.

ARTICLE 3. RESPONSIBILITIES

A. NASA KSC will use reasonable efforts to:

1. Work closely with USDA-ARS in planning and conducting the outlined research.
2. Fund and provide laboratory accommodations, support and guidance for at least one (1) NASA postdoctoral research fellow to conduct microgreen research at NASA KSC.
3. Provide travel funds for the NASA research fellow(s) to attend relevant professional conferences.
4. Conduct quarterly teleconferences with USDA-ARS for information exchange.
5. Prepare annual research finding summary and provide to USDA-ARS.
6. Fund travel for NASA research fellow(s) and NASA KSC civil servants to USDA-ARS laboratories for face-to-face technical data exchange and discussion of experiment protocols and techniques.
7. Provide final performance report to USDA-ARS Principal Investigator.

B. USDA-ARS will use reasonable efforts to:

1. Work closely with NASA KSC in planning and conducting the outlined research.
2. Fund and provide laboratory accommodations, support and guidance for at least one (1) USDA-ARS research fellow to conduct microgreen research.
3. Provide travel funds for USDA-ARS research fellow(s) to attend relevant professional conferences.
4. Conduct quarterly teleconferences with NASA KSC for information exchange.
5. Prepare annual research finding summary and provide to NASA KSC.
6. Fund travel for USDA-ARS research fellow(s) and USDA-ARS civil servants to NASA KSC laboratories for face-to-face technical data exchange and discussion of experiment protocols and techniques.
7. Provide final performance report to NASA KSC Principal Investigator.

ARTICLE 4. SCHEDULE AND MILESTONES

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

Conduct teleconferences for information exchanges	Quarterly
Provide Annual research findings summary report	One (1) year from date of signature, and each consecutive year
Provide final performance report	Within one (1) month of expiration of the agreement

ARTICLE 5. FINANCIAL OBLIGATIONS

There will be no transfer of funds 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 (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 its respective goods, services, facilities, or equipment. In the event that either Party's projected availability changes, NASA or USDA-ARS, respectively, shall be given reasonable notice of that change, so that the schedule and milestones may be adjusted accordingly. The Parties agree that each

Party's use of its own goods, services, facilities, or equipment shall have priority over the use planned in this Agreement.

ARTICLE 7. LIABILITY AND RISK OF LOSS

Each Party agrees to assume liability for its own risks arising from or related to activities conducted under this Agreement.

ARTICLE 8. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS AND HANDLING OF DATA

Both Parties will abide by the markings on any data exchanged under this Agreement.

ARTICLE 9. INTELLECTUAL PROPERTY RIGHTS - INVENTION AND PATENT RIGHTS

Unless otherwise agreed upon by NASA and USDA-ARS, custody and administration of inventions made (conceived or first actually reduced to practice) under this Agreement will remain with the respective inventing Party. In the event an invention is made jointly by employees of the Parties (including by employees of a Party's contractors or subcontractors for which the U.S. Government has ownership), the Parties will consult and agree as to future actions toward establishment of patent protection for the invention.

ARTICLE 10. RELEASE OF GENERAL INFORMATION TO THE PUBLIC AND MEDIA

NASA or USDA-ARS may, consistent with Federal law and this Agreement, release general information regarding its own participation in this Agreement as desired. Insofar as participation of the other Party in this Agreement is included in a public release, NASA and USDA-ARS will seek to consult with each other prior to any such release, consistent with the Parties' respective policies.

Pursuant to Section 841(d) of the NASA Transition Authorization Act of 2017, Public Law 115-10 (the "NTAA"), NASA is obligated to publicly disclose copies of all agreements conducted pursuant to 51 U.S.C. §20113(e) in a searchable format on the NASA website within sixty (60) days after the agreement is signed by the Parties. The Parties acknowledge that, if this Agreement is entered into pursuant to 51 U.S.C. §20113(e), this Agreement will be disclosed, without redaction, in accordance with the NTAA.

ARTICLE 11. TERM OF AGREEMENT

This Agreement becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until the completion of all obligations of both Parties hereto, or three (3) years from the effective date, whichever comes first.

ARTICLE 12. RIGHT TO TERMINATE

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

ARTICLE 13. 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" and related clauses shall survive such expiration or termination of this Agreement.

ARTICLE 14. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the performance of this Agreement.

Management Points of Contact

NASA John F. Kennedy Space Center
Matthew Jimenez
Partnership Development Manager
Mail Stop: AD-C
Kennedy Space Center, FL 32899
Phone: 321-867-4509
matthew.j.jimenez@nasa.gov

United States Department of Agriculture
Agricultural Research Service
Ms. Kristy Wallace
Grants Management Specialist
2775 F & B Rd
College Station, TX 77845
Phone: 979-260-9659
Kristy.Wallace@ars.usda.gov

Technical Points of Contact

NASA John F. Kennedy Space Center
Dr. Raymond Wheeler
Plant Physiologist
Mail Suite: UB-A
Kennedy Space Center, FL 32899
Phone: 321-861-2950
raymond.m.wheeler@nasa.gov

United States Department of Agriculture
Agricultural Research Service
Dr. Tianbao Yang
Plant Physiologist
10300 Baltimore Ave
Beltsville, MD 20705
Phone: 301-504-6635
tianbao.yang@ars.usda.gov

ARTICLE 15. DISPUTE RESOLUTION

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 "Points of Contact." The persons identified as the "Points of Contact" for NASA and USDA-ARS 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 after the Parties have separately documented in writing clear reasons for the dispute. As applicable, disputes will be resolved pursuant to The Department of the Treasury's Intragovernmental Transaction Guide (Treasury Financial Manual, Vol. 1, Chapter 2, Part 4700, Appendix 10 (hereinafter, the "Intragovernmental Transaction Guide")).

ARTICLE 16. MODIFICATIONS

Any modification to this Agreement shall be executed, in writing, and signed by an authorized representative of NASA and USDA-ARS.

ARTICLE 17. 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 18. LOAN OF GOVERNMENT PROPERTY

The parties shall enter into a NASA Form 893, Loan of NASA Equipment, for NASA equipment loaned to USDA-ARS.

ARTICLE 19. SIGNATORY AUTHORITY

Approved and authorized on behalf of each Party by:

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE
CENTER

UNITED STATES DEPARTMENT
OF AGRICULTURE
AGRICULTURAL RESEARCH
SERVICE

BY: _____
Josephine B. Burnett
Director, Exploration Research and
Technology Programs

BY: _____
Kristy Wallace
Grants Management Specialist

DATE: _____

DATE: _____