



HUMAN HEALTH AND PERFORMANCE

Exploring Space | Enhancing Life

Space Food Systems

Understanding Food Systems for Humans in Extreme Environments

Our unique space food systems expertise and capabilities complements our nutrition standards knowledge for high-quality food products—as well as technologies—into integrated testing of human-system interfaces, human performance into system concepts, and mission constraints.

World Renowned Skills and Unique Capabilities

The Johnson Space Center, a world leader in human spaceflight, possesses unique knowledge, skills, and capabilities that can be applied to solving human health and performance challenges here on earth—particularly those related to operating in extreme and harsh environments.

NASA collaboration expertise is available in the area of Space Food Systems that maintain the health and optimal performance of crewmembers during spaceflight and return to Earth. Evidence strongly supports the role of nutrition in crewmember performance and cognition. The key to good nutrition is providing a variety of high-quality food



products that are appetizing, nutritious, safe, and convenient. The food system must also take into consideration the vehicle constraints (such as mass, volume, and waste), power, mission duration, and effects on crewmember time. The Space Food Systems Laboratory maintains the tools and techniques required to develop and provision the current Space Food System, and research new technologies for future food systems.



Johnson Space Center

The enclosed JSC unique Space Food Systems expertise, skills, knowledge and capabilities are available to be used to support development of advanced food products that could be used for terrestrial applications; military uses; spacecraft for Commercial Crew; evaluations of food concepts, menus, and nutrition pertaining to new space mission endeavors such as an orbiting commercial venture, space tourism, and terrestrial operational challenges such as working and living in extreme environments like ocean exploration; optimized human nutritional performance.

Advanced Food Technology (AFT)

The AFT has the capability to perform research with new technologies that extend the shelf life of processed foods, including emerging food processing technologies and packaging materials that are lightweight and can be easily and efficiently disposed of, thereby minimizing the use of precious spacecraft resources such as mass and volume.

Spaceflight Food

JSC produces, tests, and certifies all food for its spaceflight missions and ensures appetizing, nutritious, food systems that are safe and easy to prepare on-orbit.

Food Analysis

JSC has expertise in environmental chemistry, food nutritional analysis, analytical quality assurance, toxicology, the development of water quality monitors, and water quality engineering.

Food Production

JSC has the knowledge and capabilities to produce thermally stabilized pouched foods and freeze-dried packaged foods.

Food Packaging

JSC has a variety of packaging equipment, some of which is unique, with capabilities including heat sealing, vacuum packaging, and labeling, all in a clean room environment. We can provide expertise in high barrier flexible packaging materials and headspace testing.

Food Stowage

JSC has the unique knowledge of how to efficiently pack and stow foods to minimize mass and volume, while protecting the food packages from a harsh environment.

Menu Development

JSC has the unique knowledge to create nutritionally complete menu design for extreme environments utilizing shelf stable foods.

Food Characterization

JSC has the capability to test physical food properties such as texture, color, and viscosity; expertise in accelerated shelf life testing; the capability to test water activity including moisture isotherms; and sensory evaluation and analysis.



For the benefit of all

For more information:

NASA Human Health and Performance
Center at

<http://NHHPC.nasa.gov> or go to:

<http://www.nasa.gov/centers/johnson/slsd/>

Point of contact:

Human Health and Performance Directorate
281-483-7070