

# MEDIA RELEASE

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FOR IMMEDIATE RELEASE

## **SHOT prepares for upcoming space mission, unveils new research hardware**

-- Experiment with Japanese quail eggs set to launch on space shuttle Endeavour November 29 --

**GREENVILLE, Ind. (November 1, 2001)** -- Space Hardware Optimization Technology, Inc. (SHOT), today publicly introduced its newest NASA research payload. Scheduled to launch aboard space shuttle Endeavour November 29 from Florida's Kennedy Space Center, the Avian Development Facility (ADF) is the second generation of the company's avian research hardware.

"This is a great day," said SHOT President and CEO Mark S. Deuser. "It has been more than 12 years since our first avian payload orbited on space shuttle Discovery, and nearly 10 years since we received our first contract to develop the ADF. We're so proud to finally display what our engineers have been working on."

The first of NASA's six Space Station Biological Research Project payloads to be launched, the ADF is designed to support space experiments that use Japanese quail eggs. The primary objective of flying the ADF on the upcoming mission, designated by NASA as STS-108/UF-1, is the validation of its subsystems in advance of development of a third generation of avian research hardware -- an egg incubator for the International Space Station (ISS). Avian eggs are ideally suited for microgravity research because they are self-contained and self-sustaining. Fully automated, the ADF requires no crew interaction with the eggs.

The ADF will house 36 eggs in special holders which are designed to isolate them from vibration -- minimizing any effects of launch and re-entry. The egg holders are mounted on two rotating centrifuges that will provide either exposure to microgravity when still, or when spinning at 77.3 revolutions per minute, to a gravity-force equivalent to that found on Earth.

(more)

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Interior environmental temperature, humidity, carbon dioxide and oxygen concentrations are pre-programmed to provide optimal incubation conditions. And besides spinning the entire carousel, the advanced robotics built into the ADF also permit rotation of each individual egg cup on the carousel 180 degrees every hour, similar to the manner in which a quail hen periodically turns eggs in a nest. The entire facility fits into a space shuttle middeck locker location which measures approximately 18 inches wide, 11 inches high and 22 inches deep.

Secondary objectives of this flight will be support of two peer-reviewed experiments that will study how the lack of gravity affects the development of avian embryos. Stephen Doty, Ph.D., of the Hospital for Special Surgery in New York City will study the effects of space flight on embryonic skeletal development. The development and function of the avian vestibular system will be the focus of a study by David Dickman, Ph.D., of the Central Institute of the Deaf, Washington University, St. Louis, Mo.

“The ADF provides a unique opportunity to study fundamental biological processes in ways that cannot be done here on Earth.” said SHOT Project Engineer Rachel Ormsby. “The information collected from this mission is expected to help Earth-based biotechnology and health care research leap forward toward cures or treatments that may otherwise not have been realized.

As a NASA contractor, SHOT has designed, built, verified and integrated hardware for three sub-orbital rocket flights and six space shuttle missions. The company’s most recent flight was STS-95 during which Senator John Glenn was assigned to operate its Advanced Separations bioprocessing facility. Besides the egg incubator, the company also is developing several other key payloads for the ISS.

More information is available at: <http://www.SHOT.com>.

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