**When NASA Astronaut Cady Coleman was onboard the International Space Station in 2010-2011, she gave actress Sandra Bullock some insight about life in space.**

HOUSTON, TX, October 01, 2013 /**24-7PressRelease**/ -- In the new Warner Bros. movie "Gravity," two astronauts find themselves adrift in space and struggling for survival after their spacecraft is destroyed by space debris. Although this scenario makes for gripping Hollywood entertainment, NASA actively works to protect its astronauts and vehicles from the dangers portrayed in the movie.

From protective material coating the outside of the International Space Station to meticulous and methodical training on the ground and in space covering everything from spacewalking to fires or decompression inside the space station, NASA's ground crews and astronauts are as prepared as they can be for potential anomaly, no matter how remote they may be.

On Sept. 16, Expedition 26 astronaut Cady Coleman spoke with actress Sandra Bullock to discuss Bullock's character in the movie. While developing her role, Bullock gave Coleman a call while she was aboard the space station. At the time, the actress asked Coleman to elaborate on what it's like living and moving about in microgravity. "I told her that I had long hair, and if you pulled a hair out and pushed it against something, you could move yourself across the space station," said Coleman. "That's how little force it takes."

Featured alongside Bullock and George Clooney, "Gravity" has another major star: the International Space Station
. Look closely during the film's interior shots of the space station and you may get a glimpse into what's really going on 240 miles above Earth. To focus on the facts behind the fiction, Coleman recalled her own experience living and working in space aboard the orbiting laboratory after an advanced screening of the film. "This isn't a documentary; it's a movie," said Coleman. "It transports people from this planet into space. I am really lucky, as an astronaut, to get to go and live there."

Viewers of the movie may notice that free water forms spheres in space. Although special effects helped this occur in the movie, this is a true phenomenon. It is the result of surface tension, and the Capillary Flow Experiment ( CFE ) is helping predict liquid behavior in microgravity. Coleman gained hands-on experience with this investigation during Expedition 26, assisting researchers in studying how fluids flow in containers with complex geometries. These findings provide insight used to build better ground water transportation on Earth, as well as improved cooling capabilities for electronics using heat pipes. This information also applies to the design for fuel tanks in spacecraft for long duration exploration.

Fire also plays a role in the movie, and two studies underway on the space station touch on this topic: the Burning and Suppression of Solids ( BASS ) investigation and the Flame Extinguishment Experiment ( FLEX ). FLEX recently made headlines when the space station study led to the discovery of cool flames . Findings from BASS may contribute to improved fire suppression methods for spacecraft. FLEX may lead to improved fuel efficiency on Earth and minimize pollutants in our atmosphere associated with combustion.

Scientists use microgravity combustion research to understand better the dynamic nature of how fuels burn and flames operate. "This research lets us make more accurate measurements for an easier math problem to solve," said Coleman. "Things burn in a different way in space, allowing us to understand the mechanism of burning itself--how soot is produced, how pollution happens--things happen more slowly, so we are able to better measure them."

Another area of science conducted in space in the film is plant growth . "I was pleased to have the movie show something that we actually do on the space station," said Coleman. "Up in space, we are forced to grow things in an alternative way. Just growing them in the dirt is not always the most logistically feasible option. In trying to understand those lessons, we learn how to minimize resources and still grow something."

Coleman worked with biology investigations on the space station and during the STS-93 shuttle mission, including Plant Growth Investigations in Microgravity (PGIM-1). This study monitored the plant known as mouse-ear cress (Arabidopsis thaliana) for its response to the stress of the space environment. "We looked at the wavelengths of light, how much light, what kind of medium they could grow in besides dirt, what kind of nutrients they needed and how to stress them in certain ways," said Coleman.

Handling the seedlings in microgravity was a step towards the space station's Vegetable Production System ( Veggie ) facility, where the crew will be able to grow more robust plants suitable for consumption, such as lettuce and tomatoes. The goal for this facility is to provide the crew with a fresh, nutritious and safe source of food for long duration exploration. Growing plants in space can also support relaxation and recreation. Veggie delivers nutrients and lighting to crops, while using the cabin environment for carbon dioxide to promote growth and temperature control. "If we are going to go to Mars, we are not going to be able to bring everything we need to eat," points out Coleman. "This is why it's important to understand how to

grow food in space."

Space station research will continue for years to come as the findings from the many studies build on the current collection of human knowledge. The work done aboard the International Space Station goes far beyond entertainment value, Coleman pointed out, touching on the nature of the human spirit. "Our planet sits in a neighborhood within the universe, and we are all space explorers," said Coleman. "I think space movies, in general, bring that message home to us. Whether we live with our feet on the planet or whether we live on the space station, we are all space travelers and we are a people of space exploration."

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