

Plant experiments take root on space station to inspire students

September 22 2011, By Joshua Black, Kelly Humphries, and Brad Thomas

A unique science project designed to sow the excitement of scientific discovery in students is sprouting this week aboard the International Space Station. The Plants in Space project will allow students and teachers to examine root growth in microgravity and compare the results with those from plants used in their own ground-based experiments.

The National Space Biomedical Research Institute (NSBRI) is funding the project. It began Tuesday, Sept. 20, when space station astronauts planted *Brassica rapa* seeds during the first of four scheduled five-day trials. The project's primary scientific goal is to investigate the influence of light on root orientation.

"More than 31 million [students](#) have participated in educational demonstrations on the space station, and more than a million students have done experiments linked to the space station," said NASA's [International Space Station](#) Program Scientist Julie Robinson. "It's a powerful force motivating young people to pursue careers that look to the future."

During the trials, astronauts [plant seeds](#) in a clear nutrient-filled gelatin. They will take daily photographs of root growth during each trial. Students will design and conduct their own experiments with the help of a teacher's guide developed by the NSBRI. Students will be able to compare observations and results of their investigations to the station experiments and the project's ground-based control.

"An important aspect of the Plants in Space project is that it is not cookbook science" said Nancy P. Moreno, NSBRI education and outreach program principal investigator, professor of allied health sciences at Baylor College of Medicine (BCM) and senior associate director of its Center for Educational Outreach. "Unfortunately, too often in science class, kids follow a procedure, get a predetermined result and really don't experience the excitement of science and the whole process of discovery. We know that if we enable students to ask their own questions, design their own experiments and discover their own answers, they are more likely to develop a greater interest in science."

The Plants in Space project seeks to determine if white light, heavy in the blue spectrum, can influence the direction of root growth in microgravity. Previous research has shown that plant roots respond weakly to blue light. The project also will study the effects, if any, of seed orientation on the direction of [root growth](#). The experiment design calls for mounting seeds in different orientations on a piece of balsawood, then placing them on top of the growth medium.

Data gained from the primary and secondary scientific investigations may help develop systems and techniques so future astronauts can grow their own food during extended spaceflights to destinations such as Mars.

NSBRI, funded by NASA, is a consortium of institutions studying the health risks related to long-duration spaceflight. The institute's science, technology and education projects take place at more than 60 institutions across the United States. NSBRI is funding Plants in Space, conducted in cooperation with BCM, BioServe Space Technologies at the University of Colorado in Boulder and NASA.

More information: For the teacher's guide, project information, a

"how-to" video and project imagery, visit: www.nsbri.org/Plants-in-Space/

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