

News Release



BASF supports student's research project on how to farm in space

- **Flight to the International Space Station scheduled for this summer**
- **BASF supports student research on effects of microgravity in vegetable growing**
- **First German school research project supported by NASA**

Limburgerhof, Germany – Summer of 2016 is set as the launch date: The V3PO student project supported by BASF will fly to the International Space Station (ISS). Behind V3PO are three students from the agricultural faculty of the Edith Stein School in Ravensburg, Germany, who want to find out if plant cuttings build roots in zero gravity and how the roots behave over time.

The central question for Maria Koch, Raphael Schilling and David Geray is whether vegetative propagation of vegetables is possible in space to generate fresh food for space missions without having to carry large amounts of seed. BASF and NASA became interested in this question. While BASF is providing the scientific support for the project, NASA has reserved a spot for the experiment on the ISS.

“This is perhaps the most extraordinary field experiment that my team and I have ever participated in,” said Dr. Sebastian Rohrer of the Early Fungicide Biology Department of BASF’s Crop Protection division. “We’re eagerly awaiting the launch and are curious about the results.”

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A visionary school research project

To date, experiments conducted in zero gravity have concentrated on the growth behavior of roots during seed germination. However, unlike seeds, cuttings have no root system. The students want to investigate if and how cuttings build roots, sprouts, and leaves without the influence of gravity. At the same time, a control experiment will be carried out on Earth, and hence under the influence of gravity. If cuttings can be used for vegetative propagation under zero-gravity conditions, it would be a significant advance in efforts to supply food grown in space for long-term space flights, such as to Mars.

BASF works together with agricultural scientists of the future

BASF is the only company providing scientific support. “Our hearts beat for research. We are always striving for novel ways to solve global challenges. This means that we love revolutionary ideas and unconventional thinking. That’s why we are supporting the V3PO team with scientific advice. We will not only get new insights into plant behavior, but also inspiration for new production areas,” said Dr. Harald Rang, Senior Vice President for Research and Development at BASF’s Crop Protection division

To develop a suitable experimental design, the students completed an internship at the BASF Agricultural Center in Limburgerhof. Here they prepared for the experiment that will be performed at the laboratories of the Kennedy Space Center in Florida. Once in space, there is a high probability that differences in temperature and humidity could lead the cuttings to become contaminated by bacteria or fungi. This is the area in which BASF is providing its knowledge – and its products. BASF fungicides will help protect the cuttings from fungal diseases during the research at the ISS, and on the trip there and back.

In addition to BASF, other sponsors supporting V3PO include: Dreamup, mymicrogravity, the Federal Ministry for the Economy and

Energy, the German Center for Air and Space Travel, the business consultancy inside, Airbus, and the Kreissparkasse Ravensburg.

This is the first German school project that has been accepted into the NASA Educational Program.

About Edith Stein School

The Edith Stein School Ravensburg & Aulendorf is a vocational school with more than 20 different types of educational programs. The school has over 2,000 students and more than 140 teachers. For a couple of years, the Edith Stein Schule has been one of the 9,000 UNESCO project schools worldwide. A team of teachers supports talented students in scientific competitions such as “Jugend forscht”. In recent years, they have been highly successful, even ranking among the highest on the federal level. More information on Edith Stein School is available on the Internet at www.ess-rv.de.

About BASF's Crop Protection division

With sales of more than €5.8 billion in 2015, BASF's Crop Protection division provides innovative solutions for agriculture, turf and ornamental plants, pest control and public health. Our broad portfolio of active ingredients, seed treatments, biological controls, formulations and services optimizes efficient production of high quality food and protects against post-harvest loss, damage to buildings and the transmission of disease. By delivering new technologies and know-how, BASF Crop Protection supports the effort of growers and pest management professionals to make a better life for themselves and society. Further information can be found on the web at www.agro.basf.com or on our [social media channels](#).

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 112,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into five segments: Chemicals, Performance Products, Functional Materials & Solutions, Agricultural Solutions and Oil & Gas. BASF generated sales of more than €70 billion in 2015. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (AN). Further information at www.basf.com.