

Cucumbers in space provide insights on root growth

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Astronaut Dr. Ron Garan watering cucumber seeds in Japanese module of ISS.
Credit: Credit JAXA and NASA-Astronaut

Scientists have untangled the competing influences of water and gravity on plant roots—by growing cucumbers during spaceflight.

Plant roots grow to find water, according to a process known as hydrotropism. Roots are also influenced by gravity and tend to grow downwards, called gravitropism. To find out whether gravity or water had the greater influence on [root growth](#), investigators grew cucumber plants in the microgravity environment on board the International Space Station. In their experiments, water (or hydrotropism) had more influence in controlling root growth.

"We will be able to utilize roots' ability to sense moisture gradients for controlling root growth orientation and efficiently growing plants in future space farms," said Dr. Hideyuki Takahashi, senior author of the *New Phytologist* study.

More information: Keita Morohashi et al, Gravitropism interferes with hydrotropism via counteracting auxin dynamics in cucumber roots: clinorotation and spaceflight experiments, *New Phytologist* (2017). [DOI: 10.1111/nph.14689](https://doi.org/10.1111/nph.14689)

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