

**GEEK  
& CO.  
SCIENCE!**



PROJECT KIT **Ages  
8+**

# SPaCe FARM



**THAMES & KOSMOS**



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| <ul style="list-style-type: none"> <li>1 Die-cut cardboard sheet</li> <li>2 Sheet of cutouts</li> <li>3 Mounting stands (3)</li> <li>4 Growing station</li> <li>5 Transparent dome</li> <li>6 Plant pots (2)</li> <li>7 Special soil</li> <li>8 Tiger's Jaw (<i>Faucaria tigrina</i>) seeds</li> <li>9 Gel tubes with lids (2)</li> </ul> | <ul style="list-style-type: none"> <li>10 Bag: Nutrient solution (a), 2 dye capsules (b), 1 capsule with cress seeds (c)</li> <li>11 Wooden spatula</li> <li>12 Wooden stick</li> <li>13 Measuring cup</li> <li>14 Pipette</li> <li>15 Funnel</li> <li>16 Drinking straw</li> <li>17 Paper clip (3)</li> </ul> |
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## YOU WILL ALSO NEED:

For growing plants and for the space gel: *Scissors, water, thermometer, paper towels, 1 large and 2 smaller glass bowls, 150 mL of bottled water, microwave or cooking pot and stove, oven mitt, jelly jar with lid, cotton wool*

For transplanting plants later on: *Flat rocks, flower pots (about 10 cm in diameter), old soup spoon, cactus soil, thick wooden stick (about 1 cm in diameter)*

For the experiments: *Balloon, balloon pump, scissors, glue, adhesive tape, sturdy string, paper towel or paper tissue, ruler, ball, large open area (backyard or park), assistant*

**NOTE!** *The additionally required items are highlighted in italic script in the individual experiments. Before starting the experiments, carefully read through everything that will be required and make sure to have all the materials ready.*

# Planting seeds in the space gel

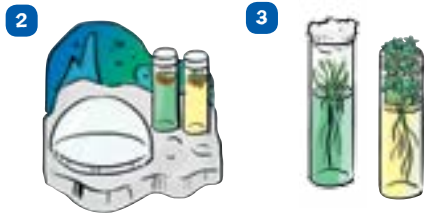
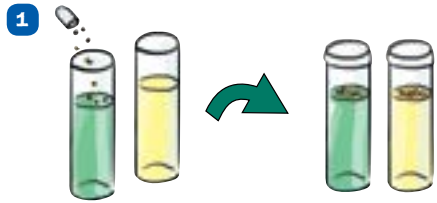
## You will need:

Prepared gel tube, lids for the tubes, cress seeds, small wooden stick, space farm, *some cotton wool*



## Here's how:

- 1 Carefully open the capsule with the seeds inside of it and sprinkle a few seeds into each tube to thinly cover the gel's surface. Close the tubes with their lids.
- 2 Set the tubes into the two round recesses of the space farm.
- 3 Now you will be able to watch the plants grow day by day. And the best part? You will be able to see how the roots of the plants grow through the clear gel! When you first see leaves, remove the lids. Replace them with some cotton wool to both protect the plants and let in the air they need.



## TIP!

You can sprinkle extra seeds in your jelly jar and cover the jar with the lid. You can also use seeds from other plants and compare the way the roots and leaves of different species develop.

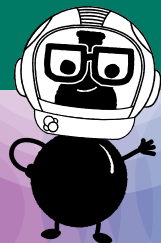
## DID YOU KNOW?

Since cress is usually harvested as little seedlings, most people don't know what the mature plants look like. If you like, you can take the plants out of the gel, carefully rinse any gel residue off the roots, and plant them in soil. Then you can learn how a cress plant grows.



## WHAT'S HAPPENING?

The cress can grow without soil because the gel contains all the nutrients that it needs to grow. See page 16 to find out whether plants can really be grown this way in space!



# IS THERE LIFE BEYOND EARTH?



That's a question that interests a lot of scientists. But it is very hard to answer, given the distance to other planets. Comparatively close to Earth is the planet Mars, which has been orbited by space probes for several years.

One such probe is the "Mars Express." This probe has lots of instruments, such as antennas that scan beneath the surface for water and ice and a special camera for photographing the planet's surface.

Since the start of its journey, the "Mars Express" has made many interesting discoveries. At the planet's south pole, for example, large quantities of ice were discovered, and large ravines can be seen in the photographs which may have been created by rivers. Presumably, then — when Mars was warmer — there was liquid water there. And if there was water, there may have been life.

Today, Mars is cold and dry, with all the water frozen into ice. Deep in the rocks, though, there might still be simple life forms such as bacteria, although a space probe would not be able to discover them.

That's why remote-controlled vehicles have been sent to Mars to drive across its surface. At present, there are two robotic Mars rovers on the planet. So far, they have only been able to transmit information back to Earth, but in a few years a vehicle should be able to collect rock samples for later analysis back here. And maybe that's when life really will be discovered beyond Earth!

