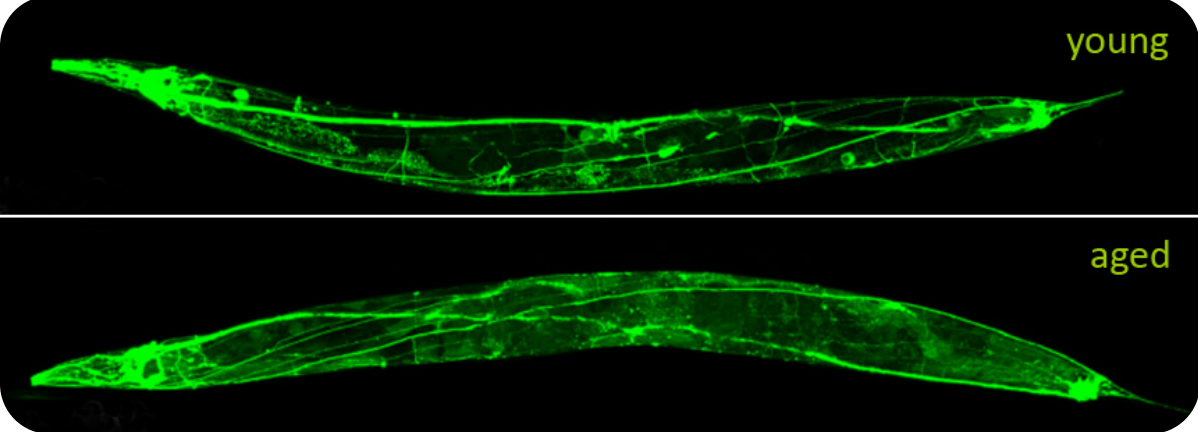


Worms in space!



A special microscope shows a tiny *C. Elegans* worm in green, so it is easy to see. Copyright: ESA

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Going into space is an exciting adventure, but some things are very difficult for astronauts. Keeping fit and having good muscle strength is a real challenge, as muscles and bones tend to get weaker in weightless conditions. Floating around the International Space Station is great fun, but not good for your health when you are there for many months!

ESA scientists are working on helping astronauts to overcome this problem. They are using a worm with the catchy name *Caenorhabditis elegans* (*C. Elegans* for short) to help them. They found that the muscles in *C. Elegans* change in weightlessness in a very similar way to human muscles. Perhaps these tiny worms – each under 1mm long – could be used as part of experiments in space to help with this research?



Astronauts need to spend a lot of time exercising, just to stop their muscles from wasting away. Copyright: ESA/NASA

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Tim Etheridge is a senior lecturer at the University of Exeter in the UK. He explains, “Worms are, perhaps surprisingly, a good model for human muscles. At the molecular level they are similar to humans and offer advantages for spaceflight research – they are very small, quick to grow as well as cheap and easy to maintain!”



The worms were sent to the International Space Station onboard a Dragon cargo craft. Copyright: ESA/NASA

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Thousands of baby *C. Elegans* worms were placed into special bags where they could live quite happily, with space and nutrients to grow and reproduce. They were then loaded onto a Dragon spacecraft, and blasted up to the International Space Station! ESA astronaut Alexander Gerst placed the worms into an incubator designed to help them to grow quickly and safely. Less than a week later they were fully grown, all in weightless conditions. The worms were then frozen, ready to be returned to Earth for study. Meanwhile, other sets of worms have been grown in normal conditions on Earth, so that the differences can be compared.

Mission scientists hope that the experiment will also help us to learn more about a possible cause of diabetes, and a condition called muscular dystrophy, where people's muscles weaken and breakdown. So, the research will help not only astronauts in space, but also people with medical conditions on Earth!

Cool fact: it was a race against time to get the worms into space, as they could only survive for 160 hours before they needed to be inside the Space Station's incubator

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