mystery science

Grades K-5
Live Stream Interview with NASA Astronaut Dr. Jessica Meir

VIDEO TRANSCRIPT

Hi, welcome to my living room. Our second live stream. We're so excited to be here! I'm here with my daughters. Do you guys want to introduce yourselves?

- I'm Mira.

- And I'm Josie.

Mira and Josie are going to be with us. We have something really special today. I'm very excited to share this with all of you—and we get sent so many questions, you guys are so curious—you have now sent us over a million questions! And I love answering as many questions as I can, but I'm not always the best person, and I wanted to bring a special guest who might be a better person to answer some of the questions that you get. So we had this idea: What if we picked out questions from our question jar that were about space, and we sent them over to NASA, and we asked NASA if they would send them up to space? And we did all of that, and honestly, we didn't think we'd hear much back, but amazingly, we couldn't believe it—they actually wrote us back, and they said that there is an astronaut on board the International Space Station who would be willing to answer our questions—and she did! And so what we did is we sent all of these questions up to astronaut, Dr. Jessica Meir, and she recorded answers while she was on board the International Space Station and sent all of those answers back to us. Now, at the time that we sent up these questions, Dr. Meir had been up in space for seven months—seven months! So what does that mean up in space, and was she just floating up there, and how did

she get up there? Well, I want to say a little bit before we just dive into these questions. I want to show you a few things. So this is Dr. Meir—there she is with her space helmet and her suit before she went up, and she's not just floating for seven months up in space. She was on board the International Space Station, which is this thing here. Now, she did get to float outside the Space Station, and we'll talk more on that in just a little bit. But she was sent by NASA in a rocket and she stayed aboard this thing—the International Space Station—it's this floating structure in space that astronauts can live and work inside of. You can think of it like a building in space. It's their home while they're up there, and it's located up over 200 miles above the Earth and it's in orbit—it's constantly circling around the Earth. When an astronaut gets sent up there, they're inside a little capsule that can duck right alongside that and go inside, and they open a door up and they get inside that way. And once they're inside of it, there's windows in there, they can look out, and they can look down onto the Earth. Here's another view of the window there, with one of the astronauts on the Space Station looking out. And you can see that this whole thing—the International Space Station—has made up these little compartments, or sections, and astronauts from different countries go up there. And as we're going to hear from Dr. Meir, while they do have a lot of fun while they're up there and they enjoy the views, they have a lot of important work they do. They're scientists. There's Dr. Meir. And when they're up there, they're doing experiments as scientists and they're learning all about life in space, as well as doing important maintenance work to keep the Space Station working. So when we heard back from Dr. Meir, I was so excited! I almost couldn't believe it because she's someone I'd been reading about in the news. Dr. Meir has become something of a hero to me, personally. Last October, she and her crewmate—there they are, Christina Koch—that's her with Christina, that's Dr. Meir on the right, and Christina Koch on the left—and they were the first astronauts to participate in the very first all-female spacewalk. Now, what that means is they put on their

astronaut suits—and you can see in this picture Dr. Meir is about to go into her astronaut suit—and they went outside the Space Station into outer space to do some work on the Space Station. So that was the very first time that that had been something done by all women. And there's talk that Dr. Meir could become the first woman to walk on the Moon, and maybe, possibly, the first human being on Mars. That would just be incredible if that were the case! So the fact that we got this video footage back from her where she answered questions, I was just—I really—I couldn't believe it! So, with that said, do we want to get started? Do you want to see what questions we sent up and what she said back? All right, let's do it. So I'm going to start by showing you all the first video she sent back down where she says, "Hello," to us. Let's go to that now.

- Hello, Doug. Hello, everybody down there on the planet Earth. My name is Jessica Meir, and I am a NASA astronaut currently on board the International Space Station on a just under seven-month mission. Actually, I'm at the end of my mission now and we'll be going home in just two weeks. I'm in space. What does that mean? It means everything up here floats, including me. Check it out. Everything floats up here. I'm really excited to be answering some of your questions today, so let's have at it. Let's get right to it. Doug, give me the first question.

Wow, that was cool! So with that said, let's get started. Let's start in with the very first question. The first question we sent up came from someone named Ava. Let's watch it now.

- Hi, Dr. Meir. I was wondering, how'd you wash your hands in space? Can you show us?

- How do we wash our hands in space? Well, it seems like a pretty simple question, but, of course, that becomes a lot more complicated when you don't have gravity. We don't actually have a good way to have running water up here, so we have no running water. How do we wash our hands? We actually use wet wipes. We have these packets of wet wipes all over the Space Station. And just like wet wipes, that baby wipes that your parents probably used for you when you were a baby and they were changing your diaper, we'll use these wet wipes to wash our hands before meals, after going to the bathroom, whenever we need to wipe off a little bit. But that does bring up another really interesting point, and that is water. We do have water up here. Of course, humans need water to survive. We need to drink a lot of water, we need water for our food, and we do need water for our hygiene as well. But how water behaves is one of the coolest things up here about microgravity. So let's take a look. Can you see my reflection in the camera? This is just a normal water right here. It's a drinking bag. I filled it up with water. We also have coffee in bags like this, tea, cocoa, juice—anything we want to drink. And that's how we can drink water in space.

All right, well, the next question we sent up came from someone named Yuvraj, and Yuvraj had a question, I think, about some of the views. So you want to check that out?

- Yeah.

All right, let's see this.

- Hi, Dr. Meir. What does space look like out the window? Can you show us?

- So those views out of the window are simply extraordinary. It's really this surreal feeling to be in the cupola surrounded by windows looking down on the planet Earth. Everybody you know, every place you've ever been, every experience you've ever had is down there in its entirety spinning below you. And one of the things that you really appreciate is how fragile, how beautiful and fragile our planet is. This thin, tenuous band of an atmosphere that makes you realize we really need to do all we can to protect our planet, to keep our oceans clean, to protect our land resources, to do all we can to recycle, conserve, and reduce our impact on our incredible planet.

Well, our next question came from Sarah, and Sarah, I know, was curious about what the astronauts are doing exactly when they're up there. So let's go to that now.

- Hi, Dr. Meir. What experiments are you doing in space right now?

- We spend a lot of our time doing a wide variety of scientific experiments, trying to understand how microgravity in the space flight environment affects our human bodies to make sure that we can keep astronauts safe and healthy while we're in space, and then also to bring us back to Earth safely as well. We do experiments with flames, even flames burn differently up here. Without gravity, there's no convection and movement of air, hot air doesn't rise, and so even flames will burn differently. We also grow vegetables up here. Of course, if we are going to go all the way to Mars, we need to develop some more sustainable food sources. We need to be able to grow our own food. So we actually—in the beginning of my mission—grew some lettuce, harvested it, and even got to eat it while we were up here. We actually got to have a fresh salad. So that was quite a treat!

All right, our next question comes from someone named Henrik, and let's just go straight to him and hear what he sent up to Dr. Meir.

- Hi, Dr. Meir. What kind of things do you do for fun?

- What kind of things do we do for fun? Well, one of my favorite pastimes is looking out the window and taking pictures. We have a lot of really nice camera equipment up here, cameras to take still images, cameras to take—lots of different video cameras like the one that I'm using right now to record this. And I like to spend a lot of the free time I have looking out the window at the magnificent Earth below. It is extraordinary to be up here looking down, seeing all the stunning beauty of all of Earth's ecosystems, the oceans, the land, the mountains. It is an amazing perspective from up here. We also spend time making phone calls or having video chats with our family and friends. Of course, it's important to keep in touch with our loved ones. And we have some games up here. We've played some Scrabble. We also have musical instruments up here. We sometimes like to play musical instruments and even have a little bit of a band going on. So you can see this guitar here. There's a saxophone that I play sometimes. I had a piccolo that I flew up during my mission. Another thing that we do for fun is just enjoy weightlessness and enjoy floating. I mean, check this out. Endless amounts of fun. Just being able to float along, lift yourself up, move in all directions, spin around in balls, have some different kind of competitions with your friends sailing through different parts of the Space Station. Endless entertainment! Of course, most of the time, we're really busy working fixing things in the Space Station, performing maintenance, and doing lots of really incredible scientific experiments, so there isn't a lot of free time, but when we do have it, we try to spend it wisely.

All right, the next question we got comes from Rosie. And I know Rosie was really curious about some of the really historic things that Dr. Meir had done. Like, I mentioned earlier that Dr. Meir and her colleague did the first all-female space walk. So let's listen to Rosie's question.

- Hi, Dr. Meir, I heard you did a spacewalk. Can you show me the glove or part of the spacesuit that you wore and how you put it on?

- That's right, I was very fortunate and actually got to do three spacewalks during my mission up here on the International Space Station. Right now, I'm in the airlock, and this is the place, as you can see, where we keep the spacesuits. And this is where we get suited up. So we actually have the spacesuits attached to the wall here to help facilitate getting them on because they're very heavy and it's very cumbersome getting into these spacesuits. When we were wearing the spacesuit, we weigh over 400 pounds. So we actually do it in parts. The spacesuit detaches here, the legs from the torso. So we would open up the spacesuit by detaching this lower portion. So this would be detached, we would shimmy into the pants, which is quite a process in the airlock. Then you're wearing those and you come up underneath here, and you come up into the upper torso, and then somebody that's helping you on the outside will connect the pants to the upper torso, and then you get your helmet on, and then you put your gloves on, and then we'll be ready to go out and initiate the spacewalk. I will never forget my first spacewalk, that moment coming out the hatch, and you look down and you see your boots and nothing else between your boots and the Earth, and you're looking through at everything into the vacuum of space through only this thin helmet visor. It is an extraordinary feeling and one that I will never forget. I hope I'm able to do another spacewalk! Into the airlock with us, I wish it were the case

that I was getting into the suit to go out and do another spacewalk, but unfortunately, that's not on the schedule for today.

All right, let's go now to our very last question. I think this is a really good one to end the questions on because this student wanted to know what Dr. Meir thinks about some of the things from her own future. So let's go now.

- Hi, Dr. Meir. Hola, Dra. Meir. I was wondering, would you be excited if you became the first woman on the Moon? ¿Yo estaba pensando si estaría emocionada en ser la primera mujer en la Luna?

- Right now is a very exciting time at NASA. So in addition to the International Space Station, we are now planning to go back to the Moon to send the first woman and the next man to the surface of the Moon with the Artemis program. And then, to go beyond that, to use that as a staging area and to eventually go on to Mars. I would love to be the first woman on the Moon. That would be an incredible honor. And I'm not sure if there's a chance of that happening, but it's got to be somebody. When I come back from this mission, I'll be in the Astronaut Office working some different jobs on the ground and then we'll see how those missions unfold and whether or not I'll be a part of them. I'm sure I'll be able to contribute in some way, whether that's supporting from the ground or being one of the very lucky people that take the next footsteps on the surface of the Moon. Well, thank you very much, Doug, and all of you watching along on the ground! It was wonderful answering some of your questions today. I've had an incredible experience up here, but of course, I'm looking forward to getting back down to that beautiful

planet Earth as well and seeing my family and friends. Stay curious! Hopefully, I will see you down there on the ground one day.