



# SPACEX CREW-4

## SCIENTIFIC JOURNEY

1  
00:00:00,800 --> 00:00:05,739  
Right as we were coming in for docking,  
we could see the space station

2  
00:00:06,039 --> 00:00:10,343  
kind of off in the distance,  
but super bright with the solar arrays.

3  
00:00:10,410 --> 00:00:11,845  
It's just absolutely gorgeous.

4  
00:00:11,845 --> 00:00:16,082  
So we're super excited to be here  
and to see more of those amazing views.

5  
00:00:17,650 --> 00:00:20,487  
Most of the time we're doing science  
performing experiments.

6  
00:00:20,787 --> 00:00:24,090  
And why is it interesting to do  
experiments up here?

7  
00:00:24,090 --> 00:00:26,292  
You might wonder, you know,  
we could do experiments on the ground.

8  
00:00:26,292 --> 00:00:28,461  
We have a bunch of laboratories  
around the world

9  
00:00:28,461 --> 00:00:30,230  
in all scientific disciplines.

10  
00:00:30,230 --> 00:00:31,965  
But the one thing that we have up here

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00:00:31,965 --> 00:00:34,934  
that those labs do not have

is microgravity.

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00:00:35,168 --> 00:00:39,005

And that brings to the forefront  
a number of phenomena,

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00:00:39,005 --> 00:00:43,009

both in the life science,  
like living organisms, like humans,

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00:00:43,009 --> 00:00:47,247

plants, microorganisms,  
animals, tissues, cells, all of that,

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00:00:47,881 --> 00:00:51,785

as well as in the physical world,  
in fluids and combustion in materials.

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00:00:52,018 --> 00:00:55,088

There's a bunch of things that either  
do not happen on the ground

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00:00:55,355 --> 00:00:58,425

or on the ground  
they're masked by the effects of gravity.

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00:00:58,425 --> 00:01:02,395

So up here because we are on orbit,  
we can like switch off the effects

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00:01:02,395 --> 00:01:03,463

of gravity and then

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00:01:03,463 --> 00:01:06,699

all of that comes to the forefront  
and we can observe and study it.

21

00:01:07,367 --> 00:01:12,205

We touch all forms of science from,  
you know, crystal growth and metallurgy

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00:01:12,806 --> 00:01:15,775  
to different life sciences,  
and there's obviously thousands

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00:01:15,775 --> 00:01:18,478  
and thousands of people  
that make that possible for us.

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00:01:18,812 --> 00:01:21,481  
And good morning Shankini  
this is Farmer with you on three.

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00:01:21,748 --> 00:01:23,283  
How are you doing today?

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00:01:23,383 --> 00:01:25,518  
Pretty good we're excited to get

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00:01:25,518 --> 00:01:29,322  
started on Immunosenescence.

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00:01:29,322 --> 00:01:32,058  
I love being a part of the plant science.

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00:01:32,092 --> 00:01:35,361  
We're actually growing plants  
in an enclosure that instead of

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00:01:35,361 --> 00:01:38,865  
using soil  
we are using hydroponics and aeroponics.

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00:01:38,865 --> 00:01:42,402  
And so we're growing carrots  
and onions and leafy greens

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00:01:42,602 --> 00:01:45,605  
and these are just really important

for long duration space exploration

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00:01:45,972 --> 00:01:49,576

to have an ability to be able  
to grow food, fresh food for consumption

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00:01:49,776 --> 00:01:53,213

for these long duration missions.

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00:01:53,213 --> 00:01:55,548

And Sam, I'm back with you.

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00:01:55,548 --> 00:02:00,620

For this module, we can see we've got  
some pretty large radishes growing there.

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00:02:02,355 --> 00:02:05,391

There  
are several earth science experiments,

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00:02:05,592 --> 00:02:09,963

one of which is looking at dust  
in the atmosphere and helping to refine

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00:02:09,963 --> 00:02:12,966

our understanding of the climate  
and how that's changing.

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00:02:14,601 --> 00:02:16,069

I am a geologist

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00:02:16,069 --> 00:02:19,672

and so to be able to see places  
that I have done

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00:02:20,140 --> 00:02:24,077

field work, to be able to see those  
from the orbital perspective

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00:02:24,077 --> 00:02:26,946

that we have here on the ISS  
is just absolutely amazing.

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00:02:27,046 --> 00:02:28,715

Earth is gorgeous.

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00:02:28,715 --> 00:02:33,620

We're up in the Canadian plains now  
and what's what's immediately obvious

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00:02:33,620 --> 00:02:37,557

once we get up here  
is just the age difference in the surface.

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00:02:39,225 --> 00:02:40,860

Farmer, Astrobee back with you.

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00:02:40,860 --> 00:02:42,629

This is really exciting.

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00:02:42,629 --> 00:02:43,897

This is really cool to see.

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00:02:43,897 --> 00:02:45,765

It's neat to see them working together.

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00:02:45,765 --> 00:02:48,067

I'm getting to study  
some of the things that I got to study

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00:02:48,501 --> 00:02:50,036

when I was in grad school.

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00:02:50,036 --> 00:02:53,373

Changes in the cardiovascular system,  
countermeasures to keep astronauts

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00:02:53,373 --> 00:02:54,007

healthy.

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00:02:54,007 --> 00:02:56,943

And by studying them up here,  
by studying astronauts as subjects,

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00:02:57,210 --> 00:02:59,312

we can gain insights  
into some of those changes

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00:02:59,312 --> 00:03:01,981

and perhaps come up with solutions,  
with treatments

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00:03:02,549 --> 00:03:06,953

for folks that are suffering  
those problems on the ground.

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00:03:06,953 --> 00:03:11,357

The motto of off the Earth for the Earth  
is truly a reality up here.