



1
00:00:00,566 --> 00:00:02,806
>> Lori Meggs: The Microbiome
experiments studies the effects

2
00:00:02,806 --> 00:00:05,136
of space travel on the
human immune system

3
00:00:05,266 --> 00:00:07,156
as well as the microbiome.

4
00:00:07,516 --> 00:00:09,386
That's the microbes
that live inside

5
00:00:09,386 --> 00:00:10,566
and outside of our bodies.

6
00:00:11,026 --> 00:00:13,286
I spoke with the Investigator
of this investigation

7
00:00:13,346 --> 00:00:14,906
to see exactly how it works.

8
00:00:15,496 --> 00:00:18,066
>> Mark Ott: The work originally
started a few years ago

9
00:00:18,446 --> 00:00:20,326
at the recommendation
of a science panel,

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00:00:20,966 --> 00:00:24,206
and they had a great deal
of interest in the type

11
00:00:24,266 --> 00:00:27,006
of organisms that were

associated with the crew -

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00:00:27,676 --> 00:00:30,306

both on their skin
and in the GI tract.

13

00:00:31,196 --> 00:00:33,216

And so we put together
a solicitation

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00:00:33,766 --> 00:00:37,016

and it was one bio group at
the J. Craig Venter Institute

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00:00:37,886 --> 00:00:41,056

and we have called it The
Crew Microbiome Experiment.

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00:00:41,876 --> 00:00:44,296

And what we are really looking
at are the changes that occur

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00:00:44,296 --> 00:00:46,726

into the micro organ - or
occurring to the micro organisms

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00:00:46,786 --> 00:00:50,606

on the crew and in the crew
that could affect their health.

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00:00:51,556 --> 00:00:52,986

>> Lori Meggs: And we have
that on earth too; right?

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00:00:52,986 --> 00:00:53,386

It's just--

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00:00:53,386 --> 00:00:54,256

>> Mark Ott: Oh, definitely.

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00:00:54,746 --> 00:00:58,006

The National Institutes
of Health, NIH,

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00:00:58,006 --> 00:01:00,556

has been putting a great deal
of funding - this is a topic

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00:01:00,626 --> 00:01:02,966

that a lot of scientists
are very interested in.

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00:01:03,366 --> 00:01:08,726

We've associated your microbial
flora with a lot of disease

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00:01:08,936 --> 00:01:10,546

and a lot of your
immune factors.

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00:01:11,206 --> 00:01:15,286

And so finding out how it
changes in what's healthy flora

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00:01:15,286 --> 00:01:18,406

and what's not healthy flora
and are more people more prone.

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00:01:18,966 --> 00:01:22,576

And can things like space flight
actually change whether you are

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00:01:22,576 --> 00:01:24,086

more prone to disease or not?

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00:01:25,196 --> 00:01:26,176

>> Lori Meggs: How
do we find this out?

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00:01:26,356 --> 00:01:27,996
How does your experiment work?

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00:01:29,506 --> 00:01:31,186
>> Mark Ott: Basically, we
are going to take samples

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00:01:31,186 --> 00:01:35,136
from the crew members:
Pre-flight, post-flight,

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00:01:35,136 --> 00:01:36,576
and a few samples in flight.

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00:01:37,606 --> 00:01:39,866
We're going to be tracking
their diets to see how

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00:01:39,866 --> 00:01:42,506
that might impact what's
going on with the flora.

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00:01:42,506 --> 00:01:44,946
We're going to be looking
at environmental conditions,

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00:01:45,216 --> 00:01:47,776
humidity, how often they clean.

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00:01:48,236 --> 00:01:51,596
Things along the lines of
the surfaces they touch.

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00:01:52,056 --> 00:01:53,506
We're going to be
looking at those try

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00:01:53,506 --> 00:01:57,766
to determine is there an
equilibrium between what goes

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00:01:57,766 --> 00:02:02,956
on outside and on and in you,
and then try to associate

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00:02:03,046 --> 00:02:05,456
that with certain
immunological factors.

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00:02:05,716 --> 00:02:07,196
So we're doing tests
on those too

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00:02:07,576 --> 00:02:09,696
to determine is there
an association

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00:02:09,696 --> 00:02:13,806
between the bacteria you
have and your immune status.

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00:02:14,506 --> 00:02:17,416
>> Lori Meggs: Is this the first
of its kind study in space?

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00:02:17,516 --> 00:02:22,086
>> Mark Ott: It is the first
of its kind study for NASSA.

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00:02:22,676 --> 00:02:24,996
Our Russian colleagues have
actually done some studies

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00:02:24,996 --> 00:02:27,666
like this and have done
so for several years.

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00:02:28,436 --> 00:02:29,846
And were things to be learned.

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00:02:30,356 --> 00:02:33,666

But the major differences
over the past few years,

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00:02:34,216 --> 00:02:37,286

biotechnology has
expanded tremendously.

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00:02:37,756 --> 00:02:40,566

It allowed us a lot of tools
that we never had before,

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00:02:41,276 --> 00:02:45,326

and so we're able to look at
things completely differently

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00:02:45,986 --> 00:02:49,016

than we did before in
a much grander scale.

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00:02:49,166 --> 00:02:53,446

So the analyses we're doing are
truly novel from the standpoint

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00:02:53,446 --> 00:02:55,116

of being able to look
at a large picture.

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00:02:55,946 --> 00:02:57,486

>> Lori Meggs: Have you
- I know it just started,

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00:02:57,486 --> 00:02:58,846

but have you learned
anything so far?

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00:02:58,846 --> 00:02:59,826

Anything interesting?

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00:03:00,756 --> 00:03:04,216

>> Mark Ott: Oh, we actually learned a lot from the NIH.

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00:03:04,276 --> 00:03:09,316

A lot of their results came out in June, and so we are able

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00:03:09,316 --> 00:03:13,236

to use a lot of that data as normal data.

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00:03:13,746 --> 00:03:15,886

So what do normal people have?

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00:03:16,526 --> 00:03:19,446

And then taking normal, healthy people as we do

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00:03:19,746 --> 00:03:23,506

and transporting them to space, it's easier to get a comparison

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00:03:24,076 --> 00:03:25,956

of what would happen on earth

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00:03:26,276 --> 00:03:27,676

versus what would happen in flight.

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00:03:28,526 --> 00:03:30,836

>> Lori Meggs: How many astronauts do you have to test?

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00:03:30,836 --> 00:03:32,066

Or how many subjects do you have?

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00:03:32,066 --> 00:03:33,086

Or how long will this go for?

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00:03:33,086 --> 00:03:34,696

>> Mark Ott: We were
going to keep going

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00:03:34,696 --> 00:03:36,156

until we had nine subjects.

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00:03:36,156 --> 00:03:38,646

We wanted to make sure that
we had enough information

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00:03:38,976 --> 00:03:40,866

to make sure it was
statistically relevant,

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00:03:41,496 --> 00:03:44,366

and so we are going
to have nine subjects.

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00:03:44,366 --> 00:03:45,766

And we should have
enough information