
PAO
NASA
SPACESTATION
LIVE

1
00:00:09,110 --> 00:00:07,590
one of the top priorities of the

2
00:00:10,950 --> 00:00:09,120
international space station science

3
00:00:12,789 --> 00:00:10,960
program is to learn more about how the

4
00:00:14,549 --> 00:00:12,799
weightless environment impacts the human

5
00:00:17,189 --> 00:00:14,559
body which will have to be in that

6
00:00:19,910 --> 00:00:17,199
environment for years at a stretch on a

7
00:00:21,590 --> 00:00:19,920
future mission to explore deep space one

8
00:00:23,830 --> 00:00:21,600
of those experiments which the

9
00:00:25,990 --> 00:00:23,840
expedition 45 crew is taking part in

10
00:00:28,150 --> 00:00:26,000
this week is studying the impact of

11
00:00:30,390 --> 00:00:28,160
long-term space travel on the astronauts

12
00:00:32,229 --> 00:00:30,400
immune system and microbiome and this

13
00:00:34,790 --> 00:00:32,239

morning we'll learn more about it from

14
00:00:36,470 --> 00:00:34,800
dr sherry ubri a senior scientist in the

15
00:00:38,310 --> 00:00:36,480
microbiology laboratory here at the

16
00:00:40,869 --> 00:00:38,320
johnson space center and a member of the

17
00:00:42,790 --> 00:00:40,879
microbiome experiment team

18
00:00:44,310 --> 00:00:42,800
hi sheri thank you for joining us today

19
00:00:46,069 --> 00:00:44,320
thank you for having me well we're here

20
00:00:47,910 --> 00:00:46,079
in the international space station uh

21
00:00:49,110 --> 00:00:47,920
flight control room and we're just

22
00:00:50,150 --> 00:00:49,120
seeing talking about some of the

23
00:00:52,630 --> 00:00:50,160
activities and i know one of the

24
00:00:55,110 --> 00:00:52,640
activities today was also kimia yui was

25
00:00:57,670 --> 00:00:55,120
taking some samples of microbiomes so

26
00:01:00,389 --> 00:00:57,680
let's just start by talking about what a

27
00:01:01,830 --> 00:01:00,399
microbiome is great a microbiome is

28
00:01:03,990 --> 00:01:01,840
actually the collective group of

29
00:01:06,230 --> 00:01:04,000
microorganisms that live in a particular

30
00:01:07,590 --> 00:01:06,240
environment such as the human body in

31
00:01:09,429 --> 00:01:07,600
particular that's what we're looking at

32
00:01:11,750 --> 00:01:09,439
during this this study when we think of

33
00:01:13,830 --> 00:01:11,760
my microorganisms or bacteria we often

34
00:01:15,830 --> 00:01:13,840
think of the bad the bad organisms or

35
00:01:17,190 --> 00:01:15,840
the bad bugs that make us ill or sick

36
00:01:18,789 --> 00:01:17,200
but we have a lot of beneficial

37
00:01:20,310 --> 00:01:18,799
organisms that live within us as well

38
00:01:22,630 --> 00:01:20,320

and that's what we're kind of focusing

39
00:01:23,510 --> 00:01:22,640
on trying to understand the changes that

40
00:01:26,310 --> 00:01:23,520
happen

41
00:01:27,830 --> 00:01:26,320
from pre-flight to to space flight and

42
00:01:30,230 --> 00:01:27,840
the changes in those organisms in the

43
00:01:33,270 --> 00:01:30,240
body so what is it about the space

44
00:01:35,749 --> 00:01:33,280
environment that we think um will impact

45
00:01:37,429 --> 00:01:35,759
the microbiome and our immune system

46
00:01:40,469 --> 00:01:37,439
those are the great questions um the

47
00:01:44,149 --> 00:01:40,479
microbiome itself changes with things

48
00:01:45,350 --> 00:01:44,159
that we do on earth it's daily stresses

49
00:01:47,270 --> 00:01:45,360
diet

50
00:01:48,950 --> 00:01:47,280
changes in environment

51
00:01:51,670 --> 00:01:48,960
interactions with other people and the

52
00:01:53,190 --> 00:01:51,680
same thing happens in space so when

53
00:01:54,710 --> 00:01:53,200
astronauts launched he's under a great

54
00:01:57,270 --> 00:01:54,720
deal of stress then he combats

55
00:01:59,590 --> 00:01:57,280
microgravity sleep deprivation changes

56
00:02:01,510 --> 00:01:59,600
in diets if they're on a space food

57
00:02:02,789 --> 00:02:01,520
package diet they're actually in a

58
00:02:05,830 --> 00:02:02,799
closed environment where they have

59
00:02:07,910 --> 00:02:05,840
recirculated air and water and all these

60
00:02:08,630 --> 00:02:07,920
things can lead to different changes in

61
00:02:13,990 --> 00:02:08,640
the

62
00:02:15,430 --> 00:02:14,000
astronaut health okay so this is very

63
00:02:17,510 --> 00:02:15,440

quite interesting actually so can you

64
00:02:18,790 --> 00:02:17,520
tell me so i know you know kimio is

65
00:02:20,550 --> 00:02:18,800
doing some sampling we've had other

66
00:02:23,110 --> 00:02:20,560
astronauts doing their sampling what

67
00:02:25,510 --> 00:02:23,120
exactly is that that they are doing to

68
00:02:27,510 --> 00:02:25,520
participate in this so there's a vast

69
00:02:29,990 --> 00:02:27,520
amount of sampling that happens they

70
00:02:31,750 --> 00:02:30,000
sampled their particular microbiome over

71
00:02:33,430 --> 00:02:31,760
the course of before flight during

72
00:02:35,750 --> 00:02:33,440
flight and after

73
00:02:38,150 --> 00:02:35,760
by taking various swabs of their body

74
00:02:40,390 --> 00:02:38,160
sites and collecting saliva samples

75
00:02:42,550 --> 00:02:40,400
things like that and they collect those

76
00:02:45,270 --> 00:02:42,560
and will analyze them back and forth in

77
00:02:46,550 --> 00:02:45,280
addition they look at samples that

78
00:02:49,030 --> 00:02:46,560
they've collected from the environment

79
00:02:50,790 --> 00:02:49,040
so they'll do surface swabs and take

80
00:02:53,990 --> 00:02:50,800
samples of the water to see if any of

81
00:02:55,990 --> 00:02:54,000
those environments kind of alter or play

82
00:02:59,350 --> 00:02:56,000
an impact into the microbiome of the

83
00:03:01,030 --> 00:02:59,360
astronaut itself okay and so

84
00:03:03,350 --> 00:03:01,040
when you said they're taking surface

85
00:03:05,110 --> 00:03:03,360
samples do we have specific areas of the

86
00:03:06,949 --> 00:03:05,120
space station of their environment that

87
00:03:08,790 --> 00:03:06,959
they're is it things that they use that

88
00:03:10,390 --> 00:03:08,800

they touch most or

89
00:03:12,309 --> 00:03:10,400
exactly yes that's what they do we

90
00:03:14,229 --> 00:03:12,319
worked actually with a lot of the crew

91
00:03:16,790 --> 00:03:14,239
and developed exactly the right sites to

92
00:03:19,110 --> 00:03:16,800
take the sampling and a lot of places

93
00:03:20,710 --> 00:03:19,120
where their hands are or the food

94
00:03:22,630 --> 00:03:20,720
preparation areas

95
00:03:24,470 --> 00:03:22,640
um handles those kind of things are

96
00:03:26,070 --> 00:03:24,480
where we focus on taking some of the

97
00:03:27,990 --> 00:03:26,080
surface samples things they'll be more

98
00:03:30,070 --> 00:03:28,000
in contact with from the environment

99
00:03:32,070 --> 00:03:30,080
yeah well thank you oh so can you tell

100
00:03:34,070 --> 00:03:32,080
me is the experiment trying to figure

101
00:03:35,990 --> 00:03:34,080
out a way to reduce the stress

102
00:03:38,309 --> 00:03:36,000
or is it just to

103
00:03:39,990 --> 00:03:38,319
qualify the the impact

104
00:03:41,830 --> 00:03:40,000
so mainly what this study is doing is

105
00:03:43,509 --> 00:03:41,840
really to characterize what changes are

106
00:03:45,270 --> 00:03:43,519
happening okay and then in future

107
00:03:46,630 --> 00:03:45,280
studies we can follow on and see how we

108
00:03:48,229 --> 00:03:46,640
can

109
00:03:50,309 --> 00:03:48,239
help the microbiome or stabilize the

110
00:03:51,670 --> 00:03:50,319
microbiome and

111
00:03:53,270 --> 00:03:51,680
do that to

112
00:03:54,630 --> 00:03:53,280
for the astronaut as a whole to reduce

113
00:03:56,390 --> 00:03:54,640

stress or really just increase the

114
00:03:58,949 --> 00:03:56,400
astronaut health

115
00:04:01,589 --> 00:03:58,959
so my next question was going to be you

116
00:04:03,190 --> 00:04:01,599
know if there might be from the results

117
00:04:04,710 --> 00:04:03,200
of this if there might be some results

118
00:04:06,309 --> 00:04:04,720
that we would have here on earth

119
00:04:08,229 --> 00:04:06,319
immediately i think we're going to find

120
00:04:10,149 --> 00:04:08,239
ways to reduce stress i think we could

121
00:04:12,869 --> 00:04:10,159
we could use that but other applications

122
00:04:15,110 --> 00:04:12,879
that you um you are thinking that maybe

123
00:04:16,069 --> 00:04:15,120
the results will have for us here on

124
00:04:18,150 --> 00:04:16,079
earth

125
00:04:19,909 --> 00:04:18,160
yes i think that this is really more of

126
00:04:22,150 --> 00:04:19,919
a holistic microbiome kind of

127
00:04:24,390 --> 00:04:22,160
application we can take the studies the

128
00:04:25,830 --> 00:04:24,400
information that we have looking at how

129
00:04:27,510 --> 00:04:25,840
it changes in a different environment

130
00:04:29,749 --> 00:04:27,520
and stressful immediately it's

131
00:04:31,990 --> 00:04:29,759
applicable to things like military and

132
00:04:35,830 --> 00:04:32,000
deployed

133
00:04:36,950 --> 00:04:35,840
that are out fighting for us and they go

134
00:04:38,790 --> 00:04:36,960
into different areas and remote

135
00:04:40,310 --> 00:04:38,800
locations their microbiomes have been

136
00:04:41,590 --> 00:04:40,320
noticed to change and so if we can find

137
00:04:43,670 --> 00:04:41,600
a way to mitigate what we're doing in

138
00:04:45,510 --> 00:04:43,680

space we can apply that to the ground

139
00:04:47,909 --> 00:04:45,520
but for every day these are things we

140
00:04:50,070 --> 00:04:47,919
encounter stresses on a daily basis and

141
00:04:52,150 --> 00:04:50,080
these are things that we could use to

142
00:04:53,830 --> 00:04:52,160
maybe take supplements probiotics things

143
00:04:55,030 --> 00:04:53,840
like that that could help us and help

144
00:04:57,270 --> 00:04:55,040
maintain and

145
00:04:59,510 --> 00:04:57,280
ease our stressful lives yeah that's

146
00:05:02,310 --> 00:04:59,520
fascinating thank you so much again real

147
00:05:04,790 --> 00:05:02,320
quick um how long is the study gonna go

148
00:05:07,189 --> 00:05:04,800
on for i know usually we do it for you

149
00:05:09,189 --> 00:05:07,199
know could be a period of years to

150
00:05:11,270 --> 00:05:09,199
really get a good uh

151
00:05:12,710 --> 00:05:11,280
yeah so this study has been going on for

152
00:05:15,029 --> 00:05:12,720
a couple years now we're actually

153
00:05:17,430 --> 00:05:15,039
collecting data from our last subject at

154
00:05:18,790 --> 00:05:17,440
this point and beginning the principal

155
00:05:20,310 --> 00:05:18,800
investigators beginning his data

156
00:05:22,629 --> 00:05:20,320
analysis and hopefully we'll have some

157
00:05:24,469 --> 00:05:22,639
great information that we can build upon

158
00:05:25,749 --> 00:05:24,479
very soon that's great we really look

159
00:05:27,110 --> 00:05:25,759
forward to hearing more about the

160
00:05:29,029 --> 00:05:27,120
results of this thank you again so much