
PROCLAIM LIBERTY
BY ORDER OF THE

1
00:00:05,590 --> 00:00:03,429
the crew always looking for new

2
00:00:07,909 --> 00:00:05,600
experiments and when the next dragon

3
00:00:09,669 --> 00:00:07,919
cargo ship the spacex vehicle arrives at

4
00:00:12,230 --> 00:00:09,679
the international space station later

5
00:00:14,950 --> 00:00:12,240
this month it'll be carrying some 5000

6
00:00:17,269 --> 00:00:14,960
pounds of supplies and science hardware

7
00:00:18,870 --> 00:00:17,279
one of the new devices and experiments

8
00:00:19,910 --> 00:00:18,880
flying up though has a pretty minimal

9
00:00:21,510 --> 00:00:19,920
weight

10
00:00:22,790 --> 00:00:21,520
because it consists primarily of

11
00:00:25,509 --> 00:00:22,800
microbes

12
00:00:28,070 --> 00:00:25,519
it's called project mercury standing for

13
00:00:30,470 --> 00:00:28,080

the microbial ecology research combining

14
00:00:32,630 --> 00:00:30,480
citizen and university researchers and

15
00:00:34,389 --> 00:00:32,640
then involved the gathering of microbes

16
00:00:37,030 --> 00:00:34,399
from a lot of locations down here on

17
00:00:38,709 --> 00:00:37,040
earth sending them to space and having

18
00:00:40,709 --> 00:00:38,719
the astronauts take some samples on

19
00:00:44,150 --> 00:00:40,719
board the station and send those back

20
00:00:46,389 --> 00:00:44,160
down to earth microbiologist dr david

21
00:00:48,389 --> 00:00:46,399
coyle of the university of california

22
00:00:50,310 --> 00:00:48,399
davis is a co-investigator on the

23
00:00:52,310 --> 00:00:50,320
project and i got to talk to him a

24
00:00:54,950 --> 00:00:52,320
little bit earlier this week started out

25
00:00:58,229 --> 00:00:54,960
by asking just why they were hoping to

26
00:00:59,990 --> 00:00:58,239
send microbes to space

27
00:01:01,670 --> 00:01:00,000
the first reason of course is just

28
00:01:03,670 --> 00:01:01,680
because it's awesome we get to send

29
00:01:05,830 --> 00:01:03,680
microbes into space

30
00:01:08,310 --> 00:01:05,840
but the scientific reason is that we're

31
00:01:10,870 --> 00:01:08,320
interested in how well

32
00:01:12,789 --> 00:01:10,880
various microbes collected from built

33
00:01:15,190 --> 00:01:12,799
environments on earth grow in

34
00:01:17,030 --> 00:01:15,200
microgravity tell me a little bit about

35
00:01:18,870 --> 00:01:17,040
the crowdsourcing element of this

36
00:01:20,469 --> 00:01:18,880
project because you guys got the public

37
00:01:22,230 --> 00:01:20,479
kind of directly involved in gathering

38
00:01:24,630 --> 00:01:22,240

some of these samples

39
00:01:27,990 --> 00:01:24,640
yeah so this project is at its heart as

40
00:01:31,109 --> 00:01:28,000
much about outreach as it is science so

41
00:01:33,590 --> 00:01:31,119
there's numerous aspects to this project

42
00:01:35,670 --> 00:01:33,600
including collecting thousands of

43
00:01:37,510 --> 00:01:35,680
samples around the country from from

44
00:01:39,350 --> 00:01:37,520
people that came to these events where

45
00:01:41,190 --> 00:01:39,360
we collected the microbes that were also

46
00:01:44,069 --> 00:01:41,200
sending into space that are being

47
00:01:45,910 --> 00:01:44,079
analyzed for a sort of a map of what

48
00:01:47,190 --> 00:01:45,920
microbes live where and how that

49
00:01:49,190 --> 00:01:47,200
compares to what's living on the

50
00:01:50,630 --> 00:01:49,200
international space station but we

51
00:01:53,270 --> 00:01:50,640
really from the beginning wanted to

52
00:01:55,270 --> 00:01:53,280
engage the public in helping collect the

53
00:01:56,709 --> 00:01:55,280
samples all the data will be available

54
00:01:58,550 --> 00:01:56,719
on our website people will be able to

55
00:02:00,550 --> 00:01:58,560
follow the growth of the microbes in

56
00:02:01,990 --> 00:02:00,560
space on our website and we really

57
00:02:04,870 --> 00:02:02,000
wanted to sort of connect with the

58
00:02:06,389 --> 00:02:04,880
public and communicate these basic ideas

59
00:02:08,949 --> 00:02:06,399
that we're interested in which is that

60
00:02:10,229 --> 00:02:08,959
microbes are everywhere and most of them

61
00:02:11,110 --> 00:02:10,239
aren't scary

62
00:02:12,790 --> 00:02:11,120
and

63
00:02:14,790 --> 00:02:12,800

kind of following your statement that

64
00:02:16,229 --> 00:02:14,800
they're everywhere i hear you guys got

65
00:02:18,949 --> 00:02:16,239
some samples from some pretty

66
00:02:22,070 --> 00:02:18,959
interesting locations as well

67
00:02:23,910 --> 00:02:22,080
yeah we collected microbes from all

68
00:02:26,150 --> 00:02:23,920
sorts of interesting places we we got

69
00:02:28,229 --> 00:02:26,160
some from the liberty bell

70
00:02:29,830 --> 00:02:28,239
we collect from a number of sporting

71
00:02:32,710 --> 00:02:29,840
events you know

72
00:02:35,030 --> 00:02:32,720
a spurs game in san antonio

73
00:02:38,309 --> 00:02:35,040
the 50-yard line at candlestick park

74
00:02:41,589 --> 00:02:38,319
where the san francisco 49ers play att

75
00:02:44,790 --> 00:02:41,599
park where the the giants play a number

76
00:02:47,190 --> 00:02:44,800
of uh sue the t-rex the the

77
00:02:49,350 --> 00:02:47,200
skeleton and the field museum all sorts

78
00:02:52,309 --> 00:02:49,360
of interesting locations

79
00:02:54,710 --> 00:02:52,319
where people were were engaged in in

80
00:02:57,030 --> 00:02:54,720
collecting microbes so to switch gears a

81
00:02:58,869 --> 00:02:57,040
little bit i'm i'm understanding you're

82
00:03:00,790 --> 00:02:58,879
also involved with somebody called the

83
00:03:02,550 --> 00:03:00,800
science cheerleaders who and what

84
00:03:04,630 --> 00:03:02,560
exactly are they and how they get

85
00:03:06,710 --> 00:03:04,640
involved in the project

86
00:03:10,630 --> 00:03:06,720
so the science cheerleaders are a

87
00:03:12,949 --> 00:03:10,640
nationwide organization of about 250

88
00:03:14,550 --> 00:03:12,959

current and former nfl and mba

89
00:03:17,190 --> 00:03:14,560
cheerleaders

90
00:03:20,070 --> 00:03:17,200
who are pursuing or have postgraduate

91
00:03:21,110 --> 00:03:20,080
degrees in in math and science fields

92
00:03:24,229 --> 00:03:21,120
and so

93
00:03:27,110 --> 00:03:24,239
they already do a whole lot of wonderful

94
00:03:29,990 --> 00:03:27,120
outreach around the country talking to

95
00:03:32,070 --> 00:03:30,000
to kids about how science can be cool

96
00:03:33,750 --> 00:03:32,080
and about how you could have a career as

97
00:03:36,710 --> 00:03:33,760
a professional cheerleader and have a

98
00:03:37,910 --> 00:03:36,720
phd in biochemistry for example

99
00:03:39,509 --> 00:03:37,920
and

100
00:03:41,670 --> 00:03:39,519
they actually are the ones who

101
00:03:43,990 --> 00:03:41,680
originally conceived of this project

102
00:03:46,470 --> 00:03:44,000
because they wanted to use their network

103
00:03:48,789 --> 00:03:46,480
of outreach context to do some real

104
00:03:51,030 --> 00:03:48,799
science instead of just talking about

105
00:03:53,429 --> 00:03:51,040
how cool science is and so they

106
00:03:55,990 --> 00:03:53,439
approached us to sort of take care of

107
00:03:58,149 --> 00:03:56,000
the microbiology end of things and they

108
00:03:59,830 --> 00:03:58,159
kind of get back to the science what

109
00:04:01,110 --> 00:03:59,840
exactly you know are you guys hoping to

110
00:04:03,509 --> 00:04:01,120
learn from this what are you going to be

111
00:04:05,910 --> 00:04:03,519
looking for upon further study of all

112
00:04:07,589 --> 00:04:05,920
these microbes either on the station or

113
00:04:08,949 --> 00:04:07,599

back here on earth

114
00:04:10,710 --> 00:04:08,959
well there's sort of two different

115
00:04:13,429 --> 00:04:10,720
questions i guess the first is you know

116
00:04:15,990 --> 00:04:13,439
we'd like to know what's living on the

117
00:04:17,830 --> 00:04:16,000
international space station

118
00:04:20,150 --> 00:04:17,840
people have done work previously where

119
00:04:21,830 --> 00:04:20,160
they've they've grown up and looked for

120
00:04:23,510 --> 00:04:21,840
various pathogens so it's a

121
00:04:25,430 --> 00:04:23,520
disease-causing microbes because that's

122
00:04:27,590 --> 00:04:25,440
something obviously nasa is concerned

123
00:04:29,590 --> 00:04:27,600
about but there hasn't been a lot of

124
00:04:31,110 --> 00:04:29,600
work on looking at the ecosystem as a

125
00:04:33,030 --> 00:04:31,120
whole so the astronauts are going to

126
00:04:34,550 --> 00:04:33,040
collect samples around the space station

127
00:04:36,390 --> 00:04:34,560
we're going to extract dna from those

128
00:04:38,550 --> 00:04:36,400
samples and look at all the microbes

129
00:04:41,270 --> 00:04:38,560
that are present just sort of a who is

130
00:04:43,110 --> 00:04:41,280
there and in what abundance kind of of

131
00:04:45,110 --> 00:04:43,120
survey and we're going to compare those

132
00:04:46,950 --> 00:04:45,120
results to similar work that we and

133
00:04:49,830 --> 00:04:46,960
others are doing in various built

134
00:04:51,670 --> 00:04:49,840
environments here on earth

135
00:04:53,430 --> 00:04:51,680
sort of related to that is the microbes

136
00:04:55,670 --> 00:04:53,440
that we're sending to the space station

137
00:04:57,590 --> 00:04:55,680
that'll be grown up by the astronauts

138
00:05:00,070 --> 00:04:57,600

and in that case we're asking how do

139
00:05:02,230 --> 00:05:00,080
these microbes behave in microgravity

140
00:05:04,070 --> 00:05:02,240
it's been shown from some previous work

141
00:05:06,629 --> 00:05:04,080
that some microbes grow differently in

142
00:05:08,230 --> 00:05:06,639
microgravity than they do on earth

143
00:05:10,710 --> 00:05:08,240
but most of that work again has been

144
00:05:12,950 --> 00:05:10,720
focused on disease-causing microbes all

145
00:05:14,870 --> 00:05:12,960
of the ones that we're sending are

146
00:05:16,550 --> 00:05:14,880
good or neutral microbes from the

147
00:05:19,270 --> 00:05:16,560
perspective of human health and we're

148
00:05:21,270 --> 00:05:19,280
interested on how they behave in space

149
00:05:25,110 --> 00:05:21,280
well it's definitely a fascinating and a

150
00:05:26,790 --> 00:05:25,120
new take on some existing studies

151
00:05:28,550 --> 00:05:26,800
like you said a big part is public

152
00:05:30,070 --> 00:05:28,560
engagement so what's the website people

153
00:05:31,270 --> 00:05:30,080
can follow along keep up with the

154
00:05:33,790 --> 00:05:31,280
research on

155
00:05:36,150 --> 00:05:33,800
so people can check us out on

156
00:05:38,790 --> 00:05:36,160
spacemicrobes.org or on twitter we use

157
00:05:40,150 --> 00:05:38,800
the hashtag spacemicrobes

158
00:05:41,749 --> 00:05:40,160
all right well

159
00:05:44,390 --> 00:05:41,759
hopefully everybody can check that out

160
00:05:47,749 --> 00:05:44,400
we'll throw up a lower third with that

161
00:05:49,430 --> 00:05:47,759
address and again dr david coyle of the

162
00:05:52,070 --> 00:05:49,440
university of california davis

163
00:05:53,830 --> 00:05:52,080

co-investigator on the mercury project

164
00:05:55,830 --> 00:05:53,840
thanks so much for calling in giving us

165
00:05:57,590 --> 00:05:55,840
an inside look at this exciting

166
00:05:58,950 --> 00:05:57,600
experiment we'll definitely follow along