
PAO
NASA
ISS D/L 5 LOS

1
00:00:03,350 --> 00:00:02,149
hi everybody josh barley here inside

2
00:00:04,870 --> 00:00:03,360
mission control i'm joined by tara

3
00:00:06,070 --> 00:00:04,880
rutley the associate program scientist

4
00:00:07,349 --> 00:00:06,080
for the international space station she

5
00:00:09,190 --> 00:00:07,359
actually just got back from wallops

6
00:00:10,390 --> 00:00:09,200
she's been traveling this week she saw i

7
00:00:11,830 --> 00:00:10,400
guess you were you there for the launch

8
00:00:13,270 --> 00:00:11,840
i missed the launch missed lunch but you

9
00:00:15,190 --> 00:00:13,280
were there for the news conference

10
00:00:16,550 --> 00:00:15,200
probably not as much fun but that's okay

11
00:00:17,990 --> 00:00:16,560
it's always fun

12
00:00:19,349 --> 00:00:18,000
so let's talk about cygnus it's on its

13
00:00:21,349 --> 00:00:19,359

way to the space station it'll be there

14
00:00:23,349 --> 00:00:21,359
this weekend it's carrying just tons of

15
00:00:24,470 --> 00:00:23,359
science for the crew a lot of student

16
00:00:26,470 --> 00:00:24,480
experiments talk a little bit about

17
00:00:28,150 --> 00:00:26,480
what's uh what's on board oh boy we have

18
00:00:29,109 --> 00:00:28,160
just about every kind of discipline on

19
00:00:31,589 --> 00:00:29,119
board

20
00:00:32,950 --> 00:00:31,599
so we have a big deal about this launch

21
00:00:35,190 --> 00:00:32,960
is that we have a lot of national

22
00:00:37,990 --> 00:00:35,200
laboratory payloads so the national lab

23
00:00:39,510 --> 00:00:38,000
is managed by cases so this is a big one

24
00:00:41,190 --> 00:00:39,520
for cases because it's the first launch

25
00:00:43,510 --> 00:00:41,200
that has the largest amount of cases

26
00:00:45,350 --> 00:00:43,520
selected science on it so what that

27
00:00:46,869 --> 00:00:45,360
means is it's going to enable a lot of

28
00:00:48,549 --> 00:00:46,879
research that's going to be focused on

29
00:00:52,630 --> 00:00:48,559
earth benefits

30
00:00:54,310 --> 00:00:52,640
such as um looking at how ants behave in

31
00:00:55,830 --> 00:00:54,320
space that's an educational earth

32
00:00:57,910 --> 00:00:55,840
benefit yeah um you know there's a

33
00:00:59,430 --> 00:00:57,920
habitat right there there you go um we

34
00:01:01,670 --> 00:00:59,440
have flown other

35
00:01:03,349 --> 00:01:01,680
creatures to stations so to speak what

36
00:01:05,429 --> 00:01:03,359
we're interested in with the ants is

37
00:01:07,350 --> 00:01:05,439
looking at how their movement behavior

38
00:01:09,830 --> 00:01:07,360

changes in different patterns in a

39
00:01:10,870 --> 00:01:09,840
microgravity environment and we don't

40
00:01:12,230 --> 00:01:10,880
know how they're going to behave we've

41
00:01:14,550 --> 00:01:12,240
never looked at this before and it's

42
00:01:16,070 --> 00:01:14,560
actually going to be performed on orbit

43
00:01:17,270 --> 00:01:16,080
and at the same time

44
00:01:19,109 --> 00:01:17,280
you know there'll be cameras watching

45
00:01:20,550 --> 00:01:19,119
these ants and that that imagery and

46
00:01:21,990 --> 00:01:20,560
video will be beamed down to students on

47
00:01:24,630 --> 00:01:22,000
the ground and the students will have

48
00:01:26,070 --> 00:01:24,640
their own education experiments with the

49
00:01:27,510 --> 00:01:26,080
ants set up in different classrooms all

50
00:01:29,030 --> 00:01:27,520
around the country following the

51
00:01:30,950 --> 00:01:29,040
movement of the amps predicting what

52
00:01:33,109 --> 00:01:30,960
they might do for thinking and learning

53
00:01:34,630 --> 00:01:33,119
about ant behavior and just probing the

54
00:01:36,149 --> 00:01:34,640
minds of the students as scientists and

55
00:01:37,990 --> 00:01:36,159
get them asking the important questions

56
00:01:39,270 --> 00:01:38,000
at the same time it's really fun because

57
00:01:40,550 --> 00:01:39,280
you know they're getting real on orbit

58
00:01:41,830 --> 00:01:40,560
imagery and

59
00:01:43,830 --> 00:01:41,840
and ants are kind of cool to learn about

60
00:01:46,069 --> 00:01:43,840
anyway i remember back we flew some

61
00:01:47,350 --> 00:01:46,079
spiders back a few years ago and i think

62
00:01:49,190 --> 00:01:47,360
one of the things that amazed me was

63
00:01:51,670 --> 00:01:49,200

that you know here's this small insect

64
00:01:53,350 --> 00:01:51,680
that adapted extremely quickly to being

65
00:01:55,030 --> 00:01:53,360
up in space and there's lessons to be

66
00:01:56,630 --> 00:01:55,040
learned from that right yeah it did yeah

67
00:01:58,630 --> 00:01:56,640
the lessons to be learned about

68
00:02:00,310 --> 00:01:58,640
adaptation apply to

69
00:02:01,910 --> 00:02:00,320
every living organism that flies in

70
00:02:04,149 --> 00:02:01,920
microgravity we're all creatures of the

71
00:02:05,749 --> 00:02:04,159
gravity environment so we humans

72
00:02:07,670 --> 00:02:05,759
astronauts we go up there we adapt we

73
00:02:09,510 --> 00:02:07,680
come home we have to readapt again to

74
00:02:11,110 --> 00:02:09,520
earth we saw it with the butterflies

75
00:02:12,390 --> 00:02:11,120
when they were learning to fly first it

76
00:02:14,150 --> 00:02:12,400
was kind of tough for them then they got

77
00:02:16,390 --> 00:02:14,160
the hang of it on orbit we learned it

78
00:02:17,750 --> 00:02:16,400
with the ant with the uh spiders um

79
00:02:19,350 --> 00:02:17,760
especially the ones that have to jump

80
00:02:21,589 --> 00:02:19,360
after their two yeah yeah because when

81
00:02:23,430 --> 00:02:21,599
they got home you know we we saw videos

82
00:02:25,350 --> 00:02:23,440
of the the spiders jumping and landing

83
00:02:28,150 --> 00:02:25,360
on their backs because they weren't used

84
00:02:29,510 --> 00:02:28,160
to jumping in on earth anymore right so

85
00:02:30,869 --> 00:02:29,520
they figured it out eventually and they

86
00:02:32,150 --> 00:02:30,879
were able to jump normally again but

87
00:02:33,910 --> 00:02:32,160
every creature goes through a

88
00:02:36,150 --> 00:02:33,920

re-adaptation period which is why the

89
00:02:38,869 --> 00:02:36,160
space station's important especially for

90
00:02:40,070 --> 00:02:38,879
exploration beyond low earth orbit yeah

91
00:02:42,150 --> 00:02:40,080
you know we talk a lot about you know

92
00:02:43,670 --> 00:02:42,160
the space station inspires students a

93
00:02:45,430 --> 00:02:43,680
lot and you know the space station's

94
00:02:46,949 --> 00:02:45,440
critically important for science i think

95
00:02:48,150 --> 00:02:46,959
one of the cool things about these these

96
00:02:49,910 --> 00:02:48,160
recent flights that we've had with

97
00:02:51,270 --> 00:02:49,920
cygnus and even the spacex flights that

98
00:02:52,470 --> 00:02:51,280
there's a lot of student activity on

99
00:02:54,550 --> 00:02:52,480
board you know we talked about it before

100
00:02:56,710 --> 00:02:54,560
there's 23 schools participating close

101
00:02:58,070 --> 00:02:56,720
to 9 000 students but they're doing real

102
00:02:59,110 --> 00:02:58,080
science like these aren't just fun

103
00:03:00,550 --> 00:02:59,120
experiments i mean they were fun but

104
00:03:01,589 --> 00:03:00,560
they're they're real science that

105
00:03:03,190 --> 00:03:01,599
they're actually looking at talking

106
00:03:05,509 --> 00:03:03,200
about yeah talk about that so there are

107
00:03:07,190 --> 00:03:05,519
several investigations as part of the

108
00:03:09,830 --> 00:03:07,200
student space uh space flight

109
00:03:11,190 --> 00:03:09,840
exploration program um where that's

110
00:03:13,470 --> 00:03:11,200
through the national center for earth

111
00:03:15,030 --> 00:03:13,480
and space science education

112
00:03:18,470 --> 00:03:15,040
ncese

113
00:03:20,390 --> 00:03:18,480

dot org and um yeah 23 different uh

114
00:03:21,670 --> 00:03:20,400
investigations ranging from bacterial

115
00:03:25,110 --> 00:03:21,680
growth uh

116
00:03:27,110 --> 00:03:25,120
to uh chemical decomposition to uh to

117
00:03:29,270 --> 00:03:27,120
all sorts of things and they they go up

118
00:03:30,630 --> 00:03:29,280
in these tiny little mix sticks and when

119
00:03:31,910 --> 00:03:30,640
they're on orbit they're activated when

120
00:03:33,750 --> 00:03:31,920
they come home the students will receive

121
00:03:35,910 --> 00:03:33,760
those samples back and look at the

122
00:03:39,190 --> 00:03:35,920
results of their proposals or their

123
00:03:41,030 --> 00:03:39,200
hypotheses and in fact these students

124
00:03:42,390 --> 00:03:41,040
you know i think over 8 000 students are

125
00:03:44,309 --> 00:03:42,400
represented on the ground by just these

126
00:03:46,390 --> 00:03:44,319
23 payloads and there were thousands

127
00:03:48,149 --> 00:03:46,400
there was about 2 000 proposals that

128
00:03:50,949 --> 00:03:48,159
were submitted so it was highly

129
00:03:52,789 --> 00:03:50,959
competitive um and you know these these

130
00:03:54,229 --> 00:03:52,799
proposals had to take you know go from

131
00:03:55,670 --> 00:03:54,239
beginning to end why do you think my

132
00:03:56,949 --> 00:03:55,680
science counts what's important what are

133
00:03:58,710 --> 00:03:56,959
we going to learn what's unique about

134
00:04:00,869 --> 00:03:58,720
microgravity and then these guys are

135
00:04:03,030 --> 00:04:00,879
going to come back in the summer and

136
00:04:04,630 --> 00:04:03,040
talk on stage in dc at the smithsonian

137
00:04:06,070 --> 00:04:04,640
about their results so this is we're

138
00:04:08,550 --> 00:04:06,080

talking fifth graders you know fifth

139
00:04:09,990 --> 00:04:08,560
through twelve i never did i never did

140
00:04:11,270 --> 00:04:10,000
such a thing when i was a fifth grader i

141
00:04:12,710 --> 00:04:11,280
don't think i was doing that yeah yeah

142
00:04:14,550 --> 00:04:12,720
so the opportunities that are coming

143
00:04:17,189 --> 00:04:14,560
through space station for students or

144
00:04:18,870 --> 00:04:17,199
and they're ongoing just just tremendous

145
00:04:20,310 --> 00:04:18,880
so talk about you know we you know the

146
00:04:21,590 --> 00:04:20,320
news came out this week that the the

147
00:04:23,670 --> 00:04:21,600
administration's proposed the station to

148
00:04:25,110 --> 00:04:23,680
be extended in 2024 things like that it

149
00:04:26,150 --> 00:04:25,120
it

150
00:04:28,230 --> 00:04:26,160
do you think that that's a good thing

151
00:04:29,830 --> 00:04:28,240
that it'll give us more chances to kind

152
00:04:31,510 --> 00:04:29,840
of see the real benefits of this i mean

153
00:04:33,830 --> 00:04:31,520
science doesn't science is not fast

154
00:04:35,590 --> 00:04:33,840
right it takes a while to kind of get

155
00:04:37,110 --> 00:04:35,600
these things up there study it and you

156
00:04:38,310 --> 00:04:37,120
know what is

157
00:04:39,670 --> 00:04:38,320
what do you think that will allow us to

158
00:04:41,350 --> 00:04:39,680
do in terms of the benefits of seeing

159
00:04:43,030 --> 00:04:41,360
things here on earth oh man you know

160
00:04:45,189 --> 00:04:43,040
first of all what it's going to do now

161
00:04:46,070 --> 00:04:45,199
for us at this very minute is allow us

162
00:04:53,749 --> 00:04:46,080
to

163
00:04:54,950 --> 00:04:53,759

end in 2020. because you said science

164
00:04:56,710 --> 00:04:54,960
takes time

165
00:04:58,150 --> 00:04:56,720
scientists want to know how can we

166
00:04:59,270 --> 00:04:58,160
replicate what we're doing and do it

167
00:05:00,550 --> 00:04:59,280
over and over again and make sure that

168
00:05:04,150 --> 00:05:00,560
what we're going to publish is a real

169
00:05:06,150 --> 00:05:04,160
benefit to earth or space so um so yeah

170
00:05:07,189 --> 00:05:06,160
the the 2024 extension is going to give

171
00:05:08,150 --> 00:05:07,199
us

172
00:05:09,990 --> 00:05:08,160
increased

173
00:05:12,230 --> 00:05:10,000
science portfolios increase numbers but

174
00:05:13,670 --> 00:05:12,240
also time to get the benefits and

175
00:05:16,150 --> 00:05:13,680
communicate the pup to the public what

176
00:05:17,749 --> 00:05:16,160
the benefits are and as you can

177
00:05:19,189 --> 00:05:17,759
science you build on science right so

178
00:05:21,110 --> 00:05:19,199
you get a basic discovery you build and

179
00:05:22,550 --> 00:05:21,120
you build and you build and in the end

180
00:05:26,469 --> 00:05:22,560
what you get is something that you hope

181
00:05:27,990 --> 00:05:26,479
is applicable to earth or space so 2024

182
00:05:29,590 --> 00:05:28,000
is going to be really exciting we've

183
00:05:31,189 --> 00:05:29,600
seen it all ramp up so far it's just

184
00:05:32,150 --> 00:05:31,199
going to get even better yeah so last

185
00:05:34,629 --> 00:05:32,160
question for you always ask this

186
00:05:36,469 --> 00:05:34,639
everybody favorite experiment on board

187
00:05:37,590 --> 00:05:36,479
maybe not right now but just in in

188
00:05:39,270 --> 00:05:37,600

everything you've ever worked on what's

189
00:05:40,710 --> 00:05:39,280
your favorite i fluctuate because you

190
00:05:42,310 --> 00:05:40,720
talk about colloids a lot which took me

191
00:05:45,430 --> 00:05:42,320
forever to understand it but you know

192
00:05:47,590 --> 00:05:45,440
colloids the colons are cool colloids

193
00:05:49,510 --> 00:05:47,600
they're not my favorite but they're cool

194
00:05:51,430 --> 00:05:49,520
um you know they they allow us to

195
00:05:53,670 --> 00:05:51,440
investigate the behavior of tiny little

196
00:05:56,150 --> 00:05:53,680
particles and a mixture of liquids such

197
00:05:57,670 --> 00:05:56,160
as milk and and believe it or not guys

198
00:05:58,710 --> 00:05:57,680
there's there's behavior that happens in

199
00:06:00,870 --> 00:05:58,720
your milk

200
00:06:03,990 --> 00:06:00,880
uh that you're just you're oblivious to

201
00:06:06,710 --> 00:06:05,270
you might

202
00:06:08,070 --> 00:06:06,720
but but when you're pouring your fabric

203
00:06:10,390 --> 00:06:08,080
softener in you want to know that what

204
00:06:12,070 --> 00:06:10,400
you're using is stable and good right

205
00:06:14,070 --> 00:06:12,080
and in that mix is colloids and so we

206
00:06:15,270 --> 00:06:14,080
look at investigations of colloids on

207
00:06:16,950 --> 00:06:15,280
the space station because we want to

208
00:06:18,550 --> 00:06:16,960
know how those tiny little particles

209
00:06:20,469 --> 00:06:18,560
really do behave because if we can

210
00:06:22,870 --> 00:06:20,479
figure it out and manipulate them what

211
00:06:25,029 --> 00:06:22,880
you get is an end product that is

212
00:06:26,309 --> 00:06:25,039
optimized for how we ever use it whether

213
00:06:28,629 --> 00:06:26,319

it's putting it in our clothes or

214
00:06:30,309 --> 00:06:28,639
drinking it right so that that's a cool

215
00:06:32,629 --> 00:06:30,319
one my favorite right now though is as

216
00:06:33,830 --> 00:06:32,639
the ams looking for dark matter and dark

217
00:06:35,830 --> 00:06:33,840
energy

218
00:06:38,070 --> 00:06:35,840
secrets of the universe yeah

219
00:06:40,150 --> 00:06:38,080
everybody wants that small task but it's

220
00:06:41,670 --> 00:06:40,160
the coolest thanks tara appreciate it if

221
00:06:43,110 --> 00:06:41,680
you want to learn more about the orbital

222
00:06:45,590 --> 00:06:43,120
sciences cygnus and what's on board just

223
00:06:47,990 --> 00:06:45,600
log onto nasa.gov orbital and of course

224
00:06:49,189 --> 00:06:48,000
we always invite you to nasa.gov station

225
00:06:50,550 --> 00:06:49,199
look on the left hand side of the page

226
00:06:51,990 --> 00:06:50,560
you'll see your research and technology

227
00:06:53,270 --> 00:06:52,000
link there just click on that and you

228
00:06:54,309 --> 00:06:53,280
can actually look up every experiment

229
00:06:56,710 --> 00:06:54,319
that the crew is actually working on

230
00:06:58,230 --> 00:06:56,720
either by expedition or by alphabetical