
KELLY
ВОЛКОВ
PEAKE
КОРНИЕНКО
46
КОРРА
МАЛЕНЧЕНКО

1
00:00:10,310 --> 00:00:07,909
now the international space station by

2
00:00:12,150 --> 00:00:10,320
design is meant to involve scientists

3
00:00:14,629 --> 00:00:12,160
from all over the world in doing

4
00:00:17,029 --> 00:00:14,639
research on this unique asset

5
00:00:20,150 --> 00:00:17,039
in the 15 years of continuous human

6
00:00:21,910 --> 00:00:20,160
habitation of the station more than 1700

7
00:00:24,950 --> 00:00:21,920
experiments have been done by

8
00:00:26,070 --> 00:00:24,960
researchers representing 83 different

9
00:00:27,990 --> 00:00:26,080
countries

10
00:00:29,509 --> 00:00:28,000
one of the organizations behind those

11
00:00:32,790 --> 00:00:29,519
numbers is the center for the

12
00:00:34,790 --> 00:00:32,800
advancement of science in space or cases

13
00:00:36,549 --> 00:00:34,800

and this morning we're joined by dr

14
00:00:38,709 --> 00:00:36,559
michael roberts the deputy chief

15
00:00:40,790 --> 00:00:38,719
scientist at cases to learn more thanks

16
00:00:42,549 --> 00:00:40,800
for joining us thank you man you can

17
00:00:44,790 --> 00:00:42,559
push the button and we'll thank everyone

18
00:00:48,069 --> 00:00:44,800
here to be here today

19
00:00:50,069 --> 00:00:48,079
cases was chosen by nasa back in 2011 to

20
00:00:51,910 --> 00:00:50,079
manage the international space station

21
00:00:53,510 --> 00:00:51,920
national laboratory

22
00:00:56,069 --> 00:00:53,520
quickly tell me what a national

23
00:00:58,389 --> 00:00:56,079
laboratory is but but how is cases

24
00:01:00,869 --> 00:00:58,399
working to fulfill that mission

25
00:01:02,549 --> 00:01:00,879
so national laboratories are facilities

26
00:01:04,149 --> 00:01:02,559
that are designed to support research

27
00:01:06,310 --> 00:01:04,159
and technology development interests of

28
00:01:07,830 --> 00:01:06,320
the united states there are several that

29
00:01:09,670 --> 00:01:07,840
operate here on the ground but there's

30
00:01:11,190 --> 00:01:09,680
only one that operates in low earth

31
00:01:12,789 --> 00:01:11,200
orbit that's the international space

32
00:01:15,670 --> 00:01:12,799
station national lab

33
00:01:17,670 --> 00:01:15,680
cases role in supporting that is that we

34
00:01:19,590 --> 00:01:17,680
help to manage and provide access to

35
00:01:22,230 --> 00:01:19,600
that national laboratory for any

36
00:01:24,550 --> 00:01:22,240
us-based investigator that can benefit

37
00:01:26,550 --> 00:01:24,560
from the unique environment of space

38
00:01:28,390 --> 00:01:26,560

the i've checked the website your

39
00:01:30,950 --> 00:01:28,400
website it says that cases is

40
00:01:33,350 --> 00:01:30,960
responsible for inciting the imagination

41
00:01:35,350 --> 00:01:33,360
of entrepreneurs and scientists

42
00:01:36,789 --> 00:01:35,360
while creating awareness of the national

43
00:01:39,030 --> 00:01:36,799
lab research

44
00:01:41,429 --> 00:01:39,040
give us a couple of examples of how you

45
00:01:43,830 --> 00:01:41,439
go about doing that certainly so one of

46
00:01:45,429 --> 00:01:43,840
the goals in creating and designating

47
00:01:46,789 --> 00:01:45,439
the us operating segment of the

48
00:01:49,830 --> 00:01:46,799
international space station as a

49
00:01:52,630 --> 00:01:49,840
national laboratory was to enable access

50
00:01:54,469 --> 00:01:52,640
for new communities of users so nasa

51
00:01:55,830 --> 00:01:54,479
obviously continues to support research

52
00:01:58,310 --> 00:01:55,840
and technology development on the

53
00:01:59,670 --> 00:01:58,320
station but cases has a portfolio which

54
00:02:01,429 --> 00:01:59,680
is slightly different than that of

55
00:02:03,910 --> 00:02:01,439
nasa's we seek out

56
00:02:05,590 --> 00:02:03,920
cust companies that have reasons for

57
00:02:07,270 --> 00:02:05,600
performing research in that unique

58
00:02:08,469 --> 00:02:07,280
environment that can benefit product

59
00:02:10,070 --> 00:02:08,479
development

60
00:02:11,990 --> 00:02:10,080
we also support companies such as

61
00:02:13,670 --> 00:02:12,000
pharmaceutical companies that utilize

62
00:02:15,030 --> 00:02:13,680
the unique aspects of living in

63
00:02:17,750 --> 00:02:15,040

microgravity

64
00:02:20,470 --> 00:02:17,760
in addition to affecting the crew

65
00:02:22,869 --> 00:02:20,480
the life living in in that environment

66
00:02:24,550 --> 00:02:22,879
also affects model organisms so there

67
00:02:26,630 --> 00:02:24,560
are opportunities for pharmaceutical

68
00:02:29,190 --> 00:02:26,640
companies to study drugs

69
00:02:31,030 --> 00:02:29,200
that combat can combat some of the

70
00:02:33,190 --> 00:02:31,040
effects of living in space environments

71
00:02:35,589 --> 00:02:33,200
such as muscle atrophy and bone mineral

72
00:02:37,509 --> 00:02:35,599
density laws things that translate as

73
00:02:39,750 --> 00:02:37,519
human diseases here on earth

74
00:02:42,470 --> 00:02:39,760
to get you to expand on that that phrase

75
00:02:44,550 --> 00:02:42,480
of model organisms we're talking about

76
00:02:46,949 --> 00:02:44,560
organisms that are being used to stand

77
00:02:49,110 --> 00:02:46,959
in for people absolutely right so there

78
00:02:51,110 --> 00:02:49,120
are some types of experiments that

79
00:02:51,910 --> 00:02:51,120
humans don't like to be test subjects

80
00:02:53,670 --> 00:02:51,920
for

81
00:02:56,229 --> 00:02:53,680
and they're also organisms that have

82
00:02:58,949 --> 00:02:56,239
much faster life cycles than humans do

83
00:03:01,190 --> 00:02:58,959
so that they can undergo a much longer

84
00:03:03,350 --> 00:03:01,200
term exposure to the microgravity

85
00:03:06,070 --> 00:03:03,360
environment in terms of their life cycle

86
00:03:08,070 --> 00:03:06,080
so we frequently use fruit flies worms

87
00:03:11,190 --> 00:03:08,080
and things like that so that we can

88
00:03:13,990 --> 00:03:11,200

learn about the effects of the life in

89
00:03:16,070 --> 00:03:14,000
microgravity environment on the biology

90
00:03:17,509 --> 00:03:16,080
of the system and those organisms

91
00:03:19,990 --> 00:03:17,519
although they're not extremely closely

92
00:03:22,309 --> 00:03:20,000
related to humans they do have genes and

93
00:03:24,630 --> 00:03:22,319
systems that behave in the same way

94
00:03:27,030 --> 00:03:24,640
and you were mentioning some of the

95
00:03:29,270 --> 00:03:27,040
different kinds of organizations that

96
00:03:31,509 --> 00:03:29,280
cases is working with a lot of that is

97
00:03:33,589 --> 00:03:31,519
commercial businesses people who are

98
00:03:35,509 --> 00:03:33,599
wanting to use the space station to

99
00:03:37,030 --> 00:03:35,519
improve their products that's exactly

100
00:03:39,830 --> 00:03:37,040
right so we

101
00:03:41,910 --> 00:03:39,840
we approach a very uh broad swath of

102
00:03:44,630 --> 00:03:41,920
interest in the united states

103
00:03:46,309 --> 00:03:44,640
we work with companies who have products

104
00:03:47,990 --> 00:03:46,319
and development or have interest in

105
00:03:50,470 --> 00:03:48,000
fundamental research and technology

106
00:03:52,550 --> 00:03:50,480
development utilizing both the shirt

107
00:03:54,949 --> 00:03:52,560
sleeve environment inside the station as

108
00:03:57,350 --> 00:03:54,959
well as access to the external

109
00:03:59,429 --> 00:03:57,360
environment outside the station we also

110
00:04:01,670 --> 00:03:59,439
have in our portfolio

111
00:04:03,910 --> 00:04:01,680
investigators who are sponsored by other

112
00:04:05,910 --> 00:04:03,920
government agencies so department of

113
00:04:08,229 --> 00:04:05,920

defense department of energy national

114
00:04:09,830 --> 00:04:08,239
institutes of health a variety of other

115
00:04:11,589 --> 00:04:09,840
government agencies who operate their

116
00:04:12,789 --> 00:04:11,599
own national labs here in the united

117
00:04:14,710 --> 00:04:12,799
states

118
00:04:16,550 --> 00:04:14,720
see the value in having access to the

119
00:04:18,390 --> 00:04:16,560
space flight environment and they simply

120
00:04:20,150 --> 00:04:18,400
can't recreate that environment in the

121
00:04:23,110 --> 00:04:20,160
national laboratories that they operate

122
00:04:25,030 --> 00:04:23,120
here on the ground a part of cases job

123
00:04:27,430 --> 00:04:25,040
is to help these people

124
00:04:29,830 --> 00:04:27,440
physically get their stuff to space

125
00:04:31,510 --> 00:04:29,840
right it is it is so

126
00:04:33,430 --> 00:04:31,520
part of our mission is enabling that

127
00:04:35,909 --> 00:04:33,440
access and we do that

128
00:04:38,150 --> 00:04:35,919
by facilitating communication between

129
00:04:39,830 --> 00:04:38,160
the researchers who are typically new to

130
00:04:41,430 --> 00:04:39,840
space they're used to being able to do

131
00:04:42,390 --> 00:04:41,440
research in the laboratory down the

132
00:04:44,070 --> 00:04:42,400
hallway

133
00:04:46,310 --> 00:04:44,080
so we put them in contact with

134
00:04:48,310 --> 00:04:46,320
implementation partners who can

135
00:04:50,870 --> 00:04:48,320
describe for them and share their

136
00:04:52,629 --> 00:04:50,880
experiences and how to do science in the

137
00:04:55,030 --> 00:04:52,639
harshness of space if they're working

138
00:04:56,710 --> 00:04:55,040

outside the station or how to package

139
00:04:59,350 --> 00:04:56,720
their biology if they want to work

140
00:05:01,510 --> 00:04:59,360
inside the station we also work closely

141
00:05:04,790 --> 00:05:01,520
with the launch providers in order to

142
00:05:06,950 --> 00:05:04,800
maximize that access to the station

143
00:05:08,550 --> 00:05:06,960
along with working with these companies

144
00:05:10,629 --> 00:05:08,560
and and the variety of different

145
00:05:13,110 --> 00:05:10,639
experiments there's an educational

146
00:05:15,029 --> 00:05:13,120
outreach component of cases his mission

147
00:05:16,629 --> 00:05:15,039
too tell me about that there is pat and

148
00:05:18,150 --> 00:05:16,639
that's one of the most exciting parts of

149
00:05:20,070 --> 00:05:18,160
our mission so every principal

150
00:05:21,830 --> 00:05:20,080
investigator that we bring on board

151
00:05:23,189 --> 00:05:21,840
through cases to have access to that

152
00:05:25,029 --> 00:05:23,199
national lab

153
00:05:28,390 --> 00:05:25,039
is also charged with helping us to

154
00:05:30,230 --> 00:05:28,400
develop a stem mission stem mission so

155
00:05:31,990 --> 00:05:30,240
we certainly recognize and acknowledge

156
00:05:34,550 --> 00:05:32,000
the excitement of working in space and

157
00:05:36,710 --> 00:05:34,560
that's a great great way to reach out to

158
00:05:38,390 --> 00:05:36,720
a new community of investigators who may

159
00:05:40,629 --> 00:05:38,400
be in kindergarten

160
00:05:42,469 --> 00:05:40,639
elementary school high school or already

161
00:05:45,189 --> 00:05:42,479
working at a university

162
00:05:47,189 --> 00:05:45,199
so we participate in a variety of formal

163
00:05:49,670 --> 00:05:47,199

education programs such as the student

164
00:05:51,189 --> 00:05:49,680
base space flight experiments program

165
00:05:53,350 --> 00:05:51,199
we work with one of the commercial

166
00:05:55,510 --> 00:05:53,360
providers nanoracks who has a very

167
00:05:57,350 --> 00:05:55,520
robust education program for middle

168
00:05:59,270 --> 00:05:57,360
school and high school level and then

169
00:06:01,029 --> 00:05:59,280
again we also engage with the companies

170
00:06:03,430 --> 00:06:01,039
the commercial entities that we bring on

171
00:06:05,270 --> 00:06:03,440
board to help them develop and support a

172
00:06:06,790 --> 00:06:05,280
stem mission because most of the

173
00:06:08,550 --> 00:06:06,800
companies we work with are truly

174
00:06:10,469 --> 00:06:08,560
interested not only in

175
00:06:12,150 --> 00:06:10,479
improving the quality of the research

176
00:06:13,430 --> 00:06:12,160
and technology development that's of

177
00:06:15,350 --> 00:06:13,440
interest to them and their product

178
00:06:18,710 --> 00:06:15,360
development they're also genuinely

179
00:06:20,710 --> 00:06:18,720
interested in being able to reach out to

180
00:06:22,870 --> 00:06:20,720
the youth and show that there are

181
00:06:24,629 --> 00:06:22,880
varieties of opportunities in that space

182
00:06:26,309 --> 00:06:24,639
environment for them as well

183
00:06:28,790 --> 00:06:26,319
is it hard to get

184
00:06:31,189 --> 00:06:28,800
these scientists or these businesses

185
00:06:32,950 --> 00:06:31,199
interested in using the space station

186
00:06:35,029 --> 00:06:32,960
it's really not that that first phone

187
00:06:36,629 --> 00:06:35,039
call uh that first communication is

188
00:06:38,790 --> 00:06:36,639

sometimes an interesting one because

189
00:06:40,790 --> 00:06:38,800
some of the uh some of the customers

190
00:06:42,550 --> 00:06:40,800
that we developed weren't aware that we

191
00:06:44,629 --> 00:06:42,560
had an international space station or

192
00:06:46,790 --> 00:06:44,639
that there was an opportunity for them

193
00:06:47,990 --> 00:06:46,800
to have access to that environment but

194
00:06:49,749 --> 00:06:48,000
once they understand what the

195
00:06:52,150 --> 00:06:49,759
capabilities are and the investments

196
00:06:54,469 --> 00:06:52,160
that we as a nation have made in

197
00:06:56,390 --> 00:06:54,479
building that laboratory and

198
00:06:59,110 --> 00:06:56,400
and completing it so that it can now

199
00:07:01,589 --> 00:06:59,120
operate truly as a national laboratory

200
00:07:03,749 --> 00:07:01,599
they become engaged very fast and

201
00:07:06,309 --> 00:07:03,759
typically it starts as a slow burn and

202
00:07:08,230 --> 00:07:06,319
then begins to grow to a big fire

203
00:07:09,909 --> 00:07:08,240
once everyone in the company realizes

204
00:07:10,629 --> 00:07:09,919
the opportunities that are available to

205
00:07:13,029 --> 00:07:10,639
them

206
00:07:15,350 --> 00:07:13,039
what's on the horizon for cases now

207
00:07:16,950 --> 00:07:15,360
it's all very good so we're certainly

208
00:07:18,870 --> 00:07:16,960
i'm glad to be here with you today on

209
00:07:21,430 --> 00:07:18,880
the anniversary of zaria you know it's

210
00:07:22,629 --> 00:07:21,440
it's hard to imagine that only 17 years

211
00:07:24,469 --> 00:07:22,639
ago the

212
00:07:26,230 --> 00:07:24,479
the first shiny object that became the

213
00:07:28,550 --> 00:07:26,240

international space station was launched

214
00:07:30,790 --> 00:07:28,560
into space but the horizon i think is

215
00:07:32,230 --> 00:07:30,800
very bright we're actively engaged with

216
00:07:34,150 --> 00:07:32,240
a variety of companies and other

217
00:07:36,550 --> 00:07:34,160
government agencies as well as academic

218
00:07:38,629 --> 00:07:36,560
institutions there's a lot of interest

219
00:07:40,790 --> 00:07:38,639
now in partnering across each of those

220
00:07:43,350 --> 00:07:40,800
diverse communities to do science in the

221
00:07:45,350 --> 00:07:43,360
international space station national lab

222
00:07:46,790 --> 00:07:45,360
good luck and and thanks for bringing us

223
00:07:49,110 --> 00:07:46,800
up to date on it thank you very much

224
00:07:51,830 --> 00:07:49,120
matt dr michael roberts is the deputy

225
00:07:53,749 --> 00:07:51,840
chief scientist for the uh for cases the