



**SPACESTATION  
LIVE**

ISS FOOD WARMER

1  
00:00:07,909 --> 00:00:06,309  
joining me now is the chief scientist

2  
00:00:09,910 --> 00:00:07,919  
for the international space station

3  
00:00:11,110 --> 00:00:09,920  
julie robinson and julie you're here in

4  
00:00:12,950 --> 00:00:11,120  
town with us in huntsville at the

5  
00:00:14,470 --> 00:00:12,960  
payload operations center and there's a

6  
00:00:16,630 --> 00:00:14,480  
working group going on and this is the

7  
00:00:17,670 --> 00:00:16,640  
chance for you guys to go face to face

8  
00:00:20,150 --> 00:00:17,680  
with those payload developers and

9  
00:00:22,150 --> 00:00:20,160  
researchers yeah so twice a year all the

10  
00:00:23,429 --> 00:00:22,160  
investigators come from the inter that

11  
00:00:25,189 --> 00:00:23,439  
are working on the international space

12  
00:00:27,349 --> 00:00:25,199  
station all around the country all

13  
00:00:28,550 --> 00:00:27,359

around the world and the payload

14

00:00:30,710 --> 00:00:28,560

developers those are especially the

15

00:00:32,389 --> 00:00:30,720

people the engineers and operators that

16

00:00:34,150 --> 00:00:32,399

help the scientists get their work done

17

00:00:36,310 --> 00:00:34,160

they all come here to huntsville to talk

18

00:00:38,470 --> 00:00:36,320

to all of the people who are sitting

19

00:00:39,830 --> 00:00:38,480

right here in the control center and

20

00:00:41,350 --> 00:00:39,840

talk to them about their research what

21

00:00:42,790 --> 00:00:41,360

they're going to be doing on orbit all

22

00:00:44,150 --> 00:00:42,800

of the different challenges ahead so

23

00:00:45,830 --> 00:00:44,160

they can really get that plan together

24

00:00:47,670 --> 00:00:45,840

and be ready to operate

25

00:00:48,950 --> 00:00:47,680

they all want a piece of your time they

26

00:00:50,790 --> 00:00:48,960

you're the key to getting them onto

27

00:00:52,310 --> 00:00:50,800

space station sometimes right tell us

28

00:00:54,389 --> 00:00:52,320

tell us how that works when they come to

29

00:00:56,310 --> 00:00:54,399

you and say hey we have this great idea

30

00:00:58,389 --> 00:00:56,320

yeah you know things start from an idea

31

00:00:59,830 --> 00:00:58,399

but they go from an idea the next thing

32

00:01:02,470 --> 00:00:59,840

the scientist has to do is get funding

33

00:01:04,149 --> 00:01:02,480

for that idea and they go they've got to

34

00:01:05,910 --> 00:01:04,159

pitch it they send proposals to

35

00:01:07,830 --> 00:01:05,920

different organizations

36

00:01:09,830 --> 00:01:07,840

for the iss they can send them to nasa

37

00:01:11,670 --> 00:01:09,840

organizations but they also send them to

38

00:01:13,830 --> 00:01:11,680

our national lab manager the center for

39

00:01:15,670 --> 00:01:13,840

the advancement of science in space even

40

00:01:17,590 --> 00:01:15,680

other government agencies like the nih

41

00:01:19,749 --> 00:01:17,600

and nsf sometimes fund research on the

42

00:01:22,870 --> 00:01:19,759

space station once they get that funding

43

00:01:24,149 --> 00:01:22,880

then the job really begins because they

44

00:01:26,390 --> 00:01:24,159

are

45

00:01:28,310 --> 00:01:26,400

putting all the plans together trying to

46

00:01:29,749 --> 00:01:28,320

figure out how what they need to launch

47

00:01:32,230 --> 00:01:29,759

how much they need to launch what are

48

00:01:33,830 --> 00:01:32,240

the procedures going to be and then as

49

00:01:35,030 --> 00:01:33,840

they get planned in once they get to

50

00:01:36,950 --> 00:01:35,040

that time when they're really ready to

51  
00:01:38,149 --> 00:01:36,960  
fly they come here to make those final

52  
00:01:40,789 --> 00:01:38,159  
plans

53  
00:01:43,510 --> 00:01:40,799  
so i've been here since expedition

54  
00:01:44,789 --> 00:01:43,520  
6. uh you've been here how long

55  
00:01:47,350 --> 00:01:44,799  
uh since

56  
00:01:50,789 --> 00:01:47,360  
re well i i started working on iss

57  
00:01:53,749 --> 00:01:50,799  
before it launched um but i came to the

58  
00:01:54,789 --> 00:01:53,759  
space station program in expedition 9.

59  
00:01:56,630 --> 00:01:54,799  
so

60  
00:01:57,990 --> 00:01:56,640  
what do you see when you look at the

61  
00:01:59,590 --> 00:01:58,000  
space station now

62  
00:02:02,149 --> 00:01:59,600  
what do you see yeah the biggest thing

63  
00:02:03,670 --> 00:02:02,159

that struck me today especially with all

64

00:02:05,270 --> 00:02:03,680

the payload developers in town was the

65

00:02:07,830 --> 00:02:05,280

first meeting of this type that i went

66

00:02:09,830 --> 00:02:07,840

to back in 2004 and it was in a small

67

00:02:13,350 --> 00:02:09,840

conference room with about 40 people

68

00:02:14,790 --> 00:02:13,360

because we only had 15 payloads 15 to 20

69

00:02:16,790 --> 00:02:14,800

payloads or experiments that we were

70

00:02:17,750 --> 00:02:16,800

going to do on orbit at that time

71

00:02:20,390 --> 00:02:17,760

and

72

00:02:23,190 --> 00:02:20,400

today it's amazing there are over 300

73

00:02:24,470 --> 00:02:23,200

attendees it's really a sign of one

74

00:02:25,830 --> 00:02:24,480

principle that a lot of people haven't

75

00:02:27,990 --> 00:02:25,840

heard about which is that the space

76

00:02:29,910 --> 00:02:28,000

station is full it's very competitive to

77

00:02:31,270 --> 00:02:29,920

get up there to get going

78

00:02:33,589 --> 00:02:31,280

scientists always have to keep looking

79

00:02:34,949 --> 00:02:33,599

for money and the competition among

80

00:02:36,390 --> 00:02:34,959

those payloads is a really good thing

81

00:02:38,630 --> 00:02:36,400

because it means that we're having the

82

00:02:40,790 --> 00:02:38,640

best of the best go into space

83

00:02:43,509 --> 00:02:40,800

a lot of commercial partners up there

84

00:02:45,509 --> 00:02:43,519

now let's talk about their research and

85

00:02:46,949 --> 00:02:45,519

and how that's making a difference now

86

00:02:50,390 --> 00:02:46,959

yeah one of the interesting things that

87

00:02:52,390 --> 00:02:50,400

we see is nasa research is more focused

88

00:02:54,229 --> 00:02:52,400

on future exploration you know what do

89

00:02:56,470 --> 00:02:54,239

we need to know so that humans will be

90

00:02:58,149 --> 00:02:56,480

healthy when they go to mars

91

00:02:59,589 --> 00:02:58,159

right now if we set humans to mars they

92

00:03:00,470 --> 00:02:59,599

would not be in great shape when they

93

00:03:02,309 --> 00:03:00,480

got there there'd be a number of

94

00:03:04,949 --> 00:03:02,319

problems we haven't solved yet

95

00:03:06,550 --> 00:03:04,959

nasa also focuses on better spacecraft

96

00:03:08,390 --> 00:03:06,560

materials other kinds of things new

97

00:03:09,990 --> 00:03:08,400

technologies

98

00:03:12,149 --> 00:03:10,000

on the other hand the space station can

99

00:03:14,070 --> 00:03:12,159

do so much more because there's research

100

00:03:15,990 --> 00:03:14,080

there that can help in improving health

101  
00:03:17,670 --> 00:03:16,000  
on earth that can provide better

102  
00:03:20,070 --> 00:03:17,680  
materials that make better products and

103  
00:03:22,149 --> 00:03:20,080  
really help our economy be strong that

104  
00:03:24,630 --> 00:03:22,159  
kind of research sometimes it comes out

105  
00:03:26,710 --> 00:03:24,640  
of the nasa work anyway but a lot of

106  
00:03:28,789 --> 00:03:26,720  
times it comes in through the iss

107  
00:03:31,270 --> 00:03:28,799  
national laboratory congress declared

108  
00:03:32,869 --> 00:03:31,280  
iss and national lab clear back in 2005

109  
00:03:36,070 --> 00:03:32,879  
for just this reason so that people

110  
00:03:38,149 --> 00:03:36,080  
could do that research and be sure that

111  
00:03:40,070 --> 00:03:38,159  
we got the maximum benefit back here on

112  
00:03:41,350 --> 00:03:40,080  
earth for the american people

113  
00:03:42,869 --> 00:03:41,360

and probably one of the most exciting

114

00:03:44,710 --> 00:03:42,879

things coming up is that scott kelly is

115

00:03:46,789 --> 00:03:44,720

going to return after being there a year

116

00:03:48,309 --> 00:03:46,799

tell us about that research and what

117

00:03:50,309 --> 00:03:48,319

that's going to mean to to the whole

118

00:03:52,550 --> 00:03:50,319

science community yeah well you know the

119

00:03:55,750 --> 00:03:52,560

last time we had crew members on orbit

120

00:03:57,750 --> 00:03:55,760

for that long it was russian cosmonauts

121

00:03:59,190 --> 00:03:57,760

and it was at a time when we just didn't

122

00:04:01,350 --> 00:03:59,200

have the medical technologies that we

123

00:04:03,270 --> 00:04:01,360

have today so we've been able to do some

124

00:04:04,789 --> 00:04:03,280

amazing things with the one year

125

00:04:07,750 --> 00:04:04,799

increment with both scott kelly and

126  
00:04:09,670 --> 00:04:07,760  
mikhail korniyenko or misha we call him

127  
00:04:11,429 --> 00:04:09,680  
and both of them are participating in a

128  
00:04:13,350 --> 00:04:11,439  
set of joint research studies that were

129  
00:04:15,429 --> 00:04:13,360  
developed between the u.s and the

130  
00:04:16,949 --> 00:04:15,439  
russian side working together one of the

131  
00:04:19,110 --> 00:04:16,959  
most exciting one of the ones of those

132  
00:04:21,909 --> 00:04:19,120  
is fluid shifts where we're actually

133  
00:04:24,150 --> 00:04:21,919  
using a russian device called chibus to

134  
00:04:25,909 --> 00:04:24,160  
draw the fluid out of the upper body and

135  
00:04:28,469 --> 00:04:25,919  
then measuring if that helps with some

136  
00:04:30,390 --> 00:04:28,479  
of the vision loss troubles that some

137  
00:04:32,150 --> 00:04:30,400  
astronauts have in space and so these

138  
00:04:33,830 --> 00:04:32,160

are our first two subjects the other

139

00:04:35,909 --> 00:04:33,840

thing that's of course amazing is to see

140

00:04:37,590 --> 00:04:35,919

that whole year because most of our

141

00:04:40,790 --> 00:04:37,600

expeditions to the space station are

142

00:04:42,870 --> 00:04:40,800

about six months or even shorter and we

143

00:04:45,110 --> 00:04:42,880

know that a transit to mars is between

144

00:04:47,110 --> 00:04:45,120

six months and a year so knowing that

145

00:04:48,629 --> 00:04:47,120

longer period of time helps us know if

146

00:04:50,710 --> 00:04:48,639

there's some exploration research that

147

00:04:53,110 --> 00:04:50,720

we're missing out on today that we

148

00:04:55,030 --> 00:04:53,120

really need to do so that we'll be sure

149

00:04:56,629 --> 00:04:55,040

that we're go for mars when the vehicles

150

00:04:58,629 --> 00:04:56,639

go from ours

151  
00:05:00,629 --> 00:04:58,639  
some news coming out hopefully this week

152  
00:05:02,870 --> 00:05:00,639  
you've had the hard job of looking at

153  
00:05:05,110 --> 00:05:02,880  
and picking the top four

154  
00:05:07,270 --> 00:05:05,120  
most important research uh results from

155  
00:05:09,430 --> 00:05:07,280  
last year yeah well i have a blog called

156  
00:05:10,390 --> 00:05:09,440  
a lab aloft and

157  
00:05:14,230 --> 00:05:10,400  
we

158  
00:05:15,510 --> 00:05:14,240  
that are crossing our desks that are

159  
00:05:17,510 --> 00:05:15,520  
interesting what's the latest and

160  
00:05:19,110 --> 00:05:17,520  
greatest and someone asked me to please

161  
00:05:21,430 --> 00:05:19,120  
tell them what the top three results

162  
00:05:22,790 --> 00:05:21,440  
were of the year and i sat down with

163  
00:05:24,150 --> 00:05:22,800

some of my science staff and we

164

00:05:25,189 --> 00:05:24,160

brainstormed and we threw out different

165

00:05:27,670 --> 00:05:25,199

ideas and we wrote them on the white

166

00:05:29,430 --> 00:05:27,680

board and we settled on four we couldn't

167

00:05:30,710 --> 00:05:29,440

we couldn't we could not cut it to three

168

00:05:32,230 --> 00:05:30,720

and the reason we had to settle on four

169

00:05:34,230 --> 00:05:32,240

is because there's so many different

170

00:05:36,469 --> 00:05:34,240

disciplines doing work on the space

171

00:05:37,670 --> 00:05:36,479

station so you can pick you know what's

172

00:05:39,110 --> 00:05:37,680

the most exciting thing that happened in

173

00:05:40,629 --> 00:05:39,120

life science but you're leaving out all

174

00:05:42,310 --> 00:05:40,639

the physical scientists and all the

175

00:05:44,070 --> 00:05:42,320

earth scientists so we did get it down

176

00:05:46,070 --> 00:05:44,080

to four so can you give us a sneak peek

177

00:05:48,070 --> 00:05:46,080

of what that sneak peek okay well one of

178

00:05:49,510 --> 00:05:48,080

them is is actually based on research

179

00:05:51,029 --> 00:05:49,520

that happened a while back on the space

180

00:05:52,469 --> 00:05:51,039

station and that was some protein

181

00:05:54,950 --> 00:05:52,479

crystal growth research

182

00:05:57,029 --> 00:05:54,960

where japanese investigators got better

183

00:05:59,350 --> 00:05:57,039

structure on a protein that helped them

184

00:06:01,590 --> 00:05:59,360

design a drug to treat duchenne's

185

00:06:03,350 --> 00:06:01,600

muscular dystrophy it's a form of

186

00:06:05,510 --> 00:06:03,360

muscular dystrophy it's genetic it

187

00:06:07,909 --> 00:06:05,520

affects boys and it's really pretty

188

00:06:10,230 --> 00:06:07,919

common like one in ten thousand boys so

189

00:06:12,629 --> 00:06:10,240

they got as far as testing this

190

00:06:14,230 --> 00:06:12,639

potential drug in animal models because

191

00:06:15,749 --> 00:06:14,240

there are some animals that also have a

192

00:06:18,629 --> 00:06:15,759

genetic disorder that looks like

193

00:06:21,909 --> 00:06:18,639

muscular dystrophy but um that's as far

194

00:06:23,909 --> 00:06:21,919

as got as it had gotten and this year uh

195

00:06:26,710 --> 00:06:23,919

through a new partnership they are

196

00:06:28,710 --> 00:06:26,720

starting clinical trials in humans so

197

00:06:30,870 --> 00:06:28,720

you never know

198

00:06:32,150 --> 00:06:30,880

a lot of clinical trials end in stepping

199

00:06:34,390 --> 00:06:32,160

away and deciding that's not a good

200

00:06:36,150 --> 00:06:34,400

treatment but in my mind

201  
00:06:37,189 --> 00:06:36,160  
once we've gotten to that point then it

202  
00:06:38,790 --> 00:06:37,199  
means

203  
00:06:40,070 --> 00:06:38,800  
if it doesn't go on to become a

204  
00:06:41,990 --> 00:06:40,080  
treatment it's because it wasn't a good

205  
00:06:43,830 --> 00:06:42,000  
treatment it's not because somebody

206  
00:06:45,830 --> 00:06:43,840  
couldn't raise the funding and so in my

207  
00:06:47,749 --> 00:06:45,840  
mind once we get to this point and judge

208  
00:06:49,430 --> 00:06:47,759  
it on its merits that's the that's a

209  
00:06:50,950 --> 00:06:49,440  
real goal for all of our space station

210  
00:06:52,870 --> 00:06:50,960  
research that's helpful to health here

211  
00:06:54,710 --> 00:06:52,880  
on earth it's a success

212  
00:06:55,749 --> 00:06:54,720  
finally before you go we won't we won't

213  
00:06:57,990 --> 00:06:55,759

give away the other three we'll make

214

00:07:00,230 --> 00:06:58,000

people go to your blog

215

00:07:02,309 --> 00:07:00,240

aloft you're here also tonight they're

216

00:07:04,150 --> 00:07:02,319

opening a new science exhibit science on

217

00:07:05,029 --> 00:07:04,160

orbit at the u.s space and rocket center

218

00:07:06,870 --> 00:07:05,039

here in huntsville you're going to be

219

00:07:09,029 --> 00:07:06,880

there for that what what's that like to

220

00:07:11,110 --> 00:07:09,039

see see it really just being an exhibit

221

00:07:12,870 --> 00:07:11,120

people can really learn more about the

222

00:07:15,189 --> 00:07:12,880

space station well one of the great

223

00:07:17,350 --> 00:07:15,199

things on the space station today is

224

00:07:19,270 --> 00:07:17,360

that we have so many stories of the

225

00:07:21,909 --> 00:07:19,280

different outstanding research

226  
00:07:24,070 --> 00:07:21,919  
discoveries research impacts people that

227  
00:07:26,629 --> 00:07:24,080  
are live today because of research on

228  
00:07:29,110 --> 00:07:26,639  
the space station and those stories are

229  
00:07:30,469 --> 00:07:29,120  
now becoming parts of the major exhibits

230  
00:07:31,909 --> 00:07:30,479  
and so this exhibit at the space and

231  
00:07:34,309 --> 00:07:31,919  
rocket center

232  
00:07:37,110 --> 00:07:34,319  
my scientific team and other specialists

233  
00:07:39,350 --> 00:07:37,120  
from around the agency had their inputs

234  
00:07:40,550 --> 00:07:39,360  
into that so that we could be sure to

235  
00:07:42,550 --> 00:07:40,560  
tell the whole story of the space

236  
00:07:44,869 --> 00:07:42,560  
station not just the engineering story

237  
00:07:46,550 --> 00:07:44,879  
of how did we build the most amazing

238  
00:07:48,629 --> 00:07:46,560

spacecraft ever built

239

00:07:49,909 --> 00:07:48,639

and not just the story of living and

240

00:07:52,469 --> 00:07:49,919

working in space and what it's like to

241

00:07:54,390 --> 00:07:52,479

be an astronaut but also the story of

242

00:07:55,909 --> 00:07:54,400

how it makes our lives better right here

243

00:07:57,350 --> 00:07:55,919

on earth and so it's really exciting to

244

00:07:58,469 --> 00:07:57,360

be here for that opening and for that

245

00:08:00,550 --> 00:07:58,479

story to be told right here in

246

00:08:02,550 --> 00:08:00,560

huntsville where the people who do that

247

00:08:03,990 --> 00:08:02,560

research live and work as well and the

248

00:08:05,350 --> 00:08:04,000

folks right right behind us that are

249

00:08:06,629 --> 00:08:05,360

working right now julie thank you so