



1
00:00:05,349 --> 00:00:01,829
scott kelly stamp champion very nice to

2
00:00:13,110 --> 00:00:07,030
hey i'm doing great good to talk to you

3
00:00:16,550 --> 00:00:14,549
all right i'm just checking the delay a

4
00:00:18,230 --> 00:00:16,560
little bit um sir we're gonna weather

5
00:00:20,310 --> 00:00:18,240
channel loves to cover space though it

6
00:00:22,310 --> 00:00:20,320
may seem like i i hit a couple of topics

7
00:00:25,029 --> 00:00:22,320
with you this morning but i see us as

8
00:00:26,470 --> 00:00:25,039
using this in many places so uh i will

9
00:00:28,950 --> 00:00:26,480
start in one direction and then we'll

10
00:00:32,790 --> 00:00:28,960
ask you about the health experiment if

11
00:00:35,910 --> 00:00:34,389
absolutely yeah there seems to be a

12
00:00:37,350 --> 00:00:35,920
little bit more of a delay than normal

13
00:00:43,430 --> 00:00:37,360

so we'll have to

14

00:00:48,069 --> 00:00:45,830

that's all right we'll edit it sir um so

15

00:00:49,590 --> 00:00:48,079

really nice to talk to you uh astronaut

16

00:00:51,590 --> 00:00:49,600

scott kelly let's talk a little bit

17

00:00:55,189 --> 00:00:51,600

about the breaking news of the day today

18

00:00:57,670 --> 00:00:55,199

so new horizon gets a flyby pluto if you

19

00:01:00,310 --> 00:00:57,680

will and we all of a sudden now learn

20

00:01:02,549 --> 00:01:00,320

that it's not just a blurry little dot

21

00:01:05,109 --> 00:01:02,559

in space it actually has a heart-shaped

22

00:01:07,830 --> 00:01:05,119

image on it it's got a reddish color to

23

00:01:09,670 --> 00:01:07,840

it and we will learn a lot more about it

24

00:01:14,390 --> 00:01:09,680

so tell me what you think what's your

25

00:01:18,710 --> 00:01:16,149

i'm pretty excited about it that thing's

26

00:01:21,350 --> 00:01:18,720

been traveling for nine years now

27

00:01:22,950 --> 00:01:21,360

over uh three billion miles

28

00:01:25,590 --> 00:01:22,960

and it's gonna pass

29

00:01:27,429 --> 00:01:25,600

uh seven thousand miles away from

30

00:01:30,310 --> 00:01:27,439

pluto's surface now pluto is much

31

00:01:31,830 --> 00:01:30,320

smaller than even our own moon but just

32

00:01:34,390 --> 00:01:31,840

to be able if you think about it just

33

00:01:36,230 --> 00:01:34,400

the the technology required to send a

34

00:01:38,630 --> 00:01:36,240

spacecraft that far

35

00:01:40,550 --> 00:01:38,640

over that many years and get that close

36

00:01:41,350 --> 00:01:40,560

is just amazing and you know there has

37

00:01:43,830 --> 00:01:41,360

never

38

00:01:45,749 --> 00:01:43,840

been a country that is has existed on

39

00:01:47,510 --> 00:01:45,759

this planet that's been able to do that

40

00:01:49,670 --> 00:01:47,520

except for the united states of america

41

00:01:52,230 --> 00:01:49,680

so i think you know our citizens need to

42

00:01:54,389 --> 00:01:52,240

really be proud um you know that they

43

00:02:01,350 --> 00:01:54,399

live in a country that is capable of

44

00:02:05,270 --> 00:02:03,109

scott kelly i got to tell you uh it's

45

00:02:07,510 --> 00:02:05,280

amazing to see what you're doing because

46

00:02:09,669 --> 00:02:07,520

if americans are paying attention you're

47

00:02:13,030 --> 00:02:09,679

about a third of the way through a

48

00:02:15,670 --> 00:02:13,040

year-long stay aboard the iss

49

00:02:17,430 --> 00:02:15,680

you've got about 200 days to go

50

00:02:19,190 --> 00:02:17,440

you'll look great but how are you

51
00:02:23,990 --> 00:02:19,200
feeling and how is it to be up there for

52
00:02:28,390 --> 00:02:24,710
yeah

53
00:02:30,229 --> 00:02:28,400
in general i'm i'm feeling pretty good

54
00:02:32,229 --> 00:02:30,239
you know it's a pretty nice environment

55
00:02:34,630 --> 00:02:32,239
up here

56
00:02:36,470 --> 00:02:34,640
the one thing that is

57
00:02:38,869 --> 00:02:36,480
can be hard to deal with is you can't

58
00:02:41,110 --> 00:02:38,879
leave it's the uh kind of the isolation

59
00:02:43,589 --> 00:02:41,120
factor but from a like a human health

60
00:02:46,070 --> 00:02:43,599
and performance uh perspective with

61
00:02:49,190 --> 00:02:46,080
regards to the exercise and everything

62
00:02:51,270 --> 00:02:49,200
yeah we uh you know we have a

63
00:02:52,869 --> 00:02:51,280

we have it pretty good now being a third

64

00:02:54,550 --> 00:02:52,879

of the way through

65

00:02:56,630 --> 00:02:54,560

it feels like i've been here a long time

66

00:02:58,309 --> 00:02:56,640

but i still have uh have much longer to

67

00:02:59,750 --> 00:02:58,319

go but

68

00:03:05,830 --> 00:02:59,760

you know i'm very optimistic it's going

69

00:03:09,509 --> 00:03:07,670

now there's some idea of what might

70

00:03:11,670 --> 00:03:09,519

happen to the human body for a year or

71

00:03:14,550 --> 00:03:11,680

an extended time in space i know you've

72

00:03:16,470 --> 00:03:14,560

got to work out two hours a day um and

73

00:03:19,350 --> 00:03:16,480

and the data from this flight may

74

00:03:21,509 --> 00:03:19,360

actually change or shift the way we send

75

00:03:23,190 --> 00:03:21,519

astronauts and for how long into space

76

00:03:25,190 --> 00:03:23,200

so let's talk a little bit about what

77

00:03:31,030 --> 00:03:25,200

you've noticed about your body and about

78

00:03:35,670 --> 00:03:33,830

well yeah you know you do get uh

79

00:03:37,509 --> 00:03:35,680

maybe more exercise for some people than

80

00:03:38,789 --> 00:03:37,519

they do get on earth so in in some

81

00:03:40,949 --> 00:03:38,799

respect you're

82

00:03:45,910 --> 00:03:40,959

you're in a little bit of a better

83

00:03:47,110 --> 00:03:45,920

condition from maybe a cardiovascular or

84

00:03:48,149 --> 00:03:47,120

you know

85

00:03:49,509 --> 00:03:48,159

strength

86

00:03:51,190 --> 00:03:49,519

perspective

87

00:03:52,309 --> 00:03:51,200

and those are the things that you can

88

00:03:53,990 --> 00:03:52,319

see

89

00:03:57,190 --> 00:03:54,000

but they're also the effects you don't

90

00:03:58,149 --> 00:03:57,200

see like uh you know the effects on your

91

00:04:01,190 --> 00:03:58,159

on your

92

00:04:03,509 --> 00:04:01,200

you know your dna your rna

93

00:04:05,670 --> 00:04:03,519

stuff on a on a much smaller level from

94

00:04:08,149 --> 00:04:05,680

the results of radiation or the

95

00:04:10,949 --> 00:04:08,159

microgravity environment there's effects

96

00:04:12,710 --> 00:04:10,959

on our uh on our vision there's effects

97

00:04:15,030 --> 00:04:12,720

on our immune system

98

00:04:16,469 --> 00:04:15,040

but uh you know overall i feel pretty

99

00:04:18,310 --> 00:04:16,479

good um

100

00:04:20,069 --> 00:04:18,320

you know the the atmosphere on the space

101
00:04:23,990 --> 00:04:20,079
station changes sometimes with regards

102
00:04:25,909 --> 00:04:24,000
to the co2 levels we have and that uh

103
00:04:28,790 --> 00:04:25,919
you know has some negative effects but

104
00:04:31,110 --> 00:04:28,800
you know we work very hard at keeping

105
00:04:34,150 --> 00:04:31,120
those levels down as much as we can and

106
00:04:35,749 --> 00:04:34,160
mitigating uh those kind of effects but

107
00:04:37,189 --> 00:04:35,759
uh you know overall i have to say

108
00:04:39,830 --> 00:04:37,199
haven't been here

109
00:04:42,469 --> 00:04:39,840
for uh over a hundred days now with uh

110
00:04:44,950 --> 00:04:42,479
like you said 200 days ahead of me

111
00:04:52,710 --> 00:04:44,960
i feel i feel pretty good and pretty uh

112
00:04:56,629 --> 00:04:54,390
you know it's funny because we think

113
00:04:58,469 --> 00:04:56,639

that the entire um

114

00:05:00,550 --> 00:04:58,479

you know your environment will be

115

00:05:02,310 --> 00:05:00,560

controlled and completely regulated that

116

00:05:04,710 --> 00:05:02,320

you would have the optimum amount of

117

00:05:07,029 --> 00:05:04,720

oxygen and the optimal amount of water

118

00:05:08,230 --> 00:05:07,039

and the optimal amount of co2 we just

119

00:05:09,670 --> 00:05:08,240

think that all those things will be

120

00:05:10,390 --> 00:05:09,680

taken care of it's very interesting to

121

00:05:14,150 --> 00:05:10,400

know

122

00:05:19,350 --> 00:05:14,160

to figure out what's right for you guys

123

00:05:23,110 --> 00:05:20,950

yeah so this is uh you know it's a very

124

00:05:24,469 --> 00:05:23,120

isolated environment and uh you know we

125

00:05:26,390 --> 00:05:24,479

get uh

126

00:05:27,830 --> 00:05:26,400

we're supposed to get regular resupplies

127

00:05:29,430 --> 00:05:27,840

you know we've seen this last year that

128

00:05:30,310 --> 00:05:29,440

there have been some challenges with

129

00:05:31,270 --> 00:05:30,320

that

130

00:05:33,510 --> 00:05:31,280

um

131

00:05:36,310 --> 00:05:33,520

and you know we have to live with them

132

00:05:38,469 --> 00:05:36,320

you know because of of the remoteness of

133

00:05:40,710 --> 00:05:38,479

this place and and the speed we're going

134

00:05:42,950 --> 00:05:40,720

around the earth we have to make our own

135

00:05:45,350 --> 00:05:42,960

water you know we can't expect to get

136

00:05:46,150 --> 00:05:45,360

water from uh from the earth at any time

137

00:05:50,790 --> 00:05:46,160

we

138

00:05:53,029 --> 00:05:50,800

of the air and using our urine and

139

00:05:55,029 --> 00:05:53,039

turning it into water and that's a very

140

00:05:57,830 --> 00:05:55,039

very sophisticated process it's very

141

00:05:59,189 --> 00:05:57,840

complicated and it's not always uh

142

00:06:00,870 --> 00:05:59,199

you know it doesn't always work

143

00:06:02,550 --> 00:06:00,880

perfectly we have to tweak it every once

144

00:06:04,469 --> 00:06:02,560

in a while but it's uh you know really

145

00:06:06,629 --> 00:06:04,479

an amazing capability we have the same

146

00:06:08,309 --> 00:06:06,639

thing with electricity you know the

147

00:06:09,749 --> 00:06:08,319

power on the space station the

148

00:06:11,430 --> 00:06:09,759

electrical power is produced from the

149

00:06:12,790 --> 00:06:11,440

sun and that's also

150

00:06:15,430 --> 00:06:12,800

a very

151

00:06:17,590 --> 00:06:15,440

very complicated uh system

152

00:06:19,029 --> 00:06:17,600

and i think we do a good we do a good

153

00:06:20,390 --> 00:06:19,039

great job at controlling it and it's

154

00:06:23,029 --> 00:06:20,400

something we're going to need to know

155

00:06:28,710 --> 00:06:23,039

how to do as we travel further away from

156

00:06:32,629 --> 00:06:30,469

let me just ask you personally about

157

00:06:34,469 --> 00:06:32,639

this so we saw the failed spacex

158

00:06:36,309 --> 00:06:34,479

missions and we know talking about your

159

00:06:38,309 --> 00:06:36,319

supply line that that interrupted the

160

00:06:39,909 --> 00:06:38,319

supply line for a while and i don't know

161

00:06:42,150 --> 00:06:39,919

whether it was real but there was some

162

00:06:44,629 --> 00:06:42,160

conversation concern about having to

163

00:06:46,870 --> 00:06:44,639

evacuate if supplies weren't gotten to

164

00:06:49,510 --> 00:06:46,880

you what's the personal feeling that you

165

00:06:54,870 --> 00:06:49,520

have when you're watching that all play

166

00:06:58,230 --> 00:06:56,390

well you know there's a lot of stuff on

167

00:07:01,670 --> 00:06:58,240

there that we needed

168

00:07:03,749 --> 00:07:01,680

some of it was very expensive

169

00:07:06,550 --> 00:07:03,759

you know we had an international docking

170

00:07:07,990 --> 00:07:06,560

adapter that was uh is important to the

171

00:07:09,830 --> 00:07:08,000

space station that we were going to

172

00:07:10,870 --> 00:07:09,840

install here in the next few months that

173

00:07:13,270 --> 00:07:10,880

allows

174

00:07:15,430 --> 00:07:13,280

uh commercial crew vehicles to dock to

175

00:07:17,430 --> 00:07:15,440

the space station we have another one

176

00:07:19,189 --> 00:07:17,440

and uh but we wanted to have two so

177

00:07:21,029 --> 00:07:19,199

crews could do a uh what's called a

178

00:07:22,550 --> 00:07:21,039

direct handover see each other as

179

00:07:25,029 --> 00:07:22,560

they're changing out on board the space

180

00:07:26,870 --> 00:07:25,039

station we had some filters that were

181

00:07:27,990 --> 00:07:26,880

are important for our water so we need

182

00:07:30,070 --> 00:07:28,000

to manage

183

00:07:32,629 --> 00:07:30,080

uh how we produce our water a little bit

184

00:07:34,469 --> 00:07:32,639

differently to keep the quality uh high

185

00:07:35,270 --> 00:07:34,479

enough for us to drink

186

00:07:36,950 --> 00:07:35,280

um

187

00:07:39,110 --> 00:07:36,960

there are personal items on there but

188

00:07:40,629 --> 00:07:39,120

the the good news is all those things

189

00:07:43,029 --> 00:07:40,639

can be replaced they're just things

190

00:07:45,350 --> 00:07:43,039

they're not people and uh you know with

191

00:07:47,670 --> 00:07:45,360

this spacex vehicle perhaps you know

192

00:07:49,430 --> 00:07:47,680

it's you can look at it uh as a good

193

00:07:51,749 --> 00:07:49,440

thing maybe because maybe we'll learn

194

00:07:54,390 --> 00:07:51,759

something from that before we start uh

195

00:07:58,150 --> 00:07:54,400

putting humans on a

196

00:08:00,469 --> 00:07:58,160

spacex vehicle uh when we start flying

197

00:08:02,469 --> 00:08:00,479

astronauts to the united uh to the space

198

00:08:04,070 --> 00:08:02,479

station from the united states so you

199

00:08:11,670 --> 00:08:04,080

know there are downsides but they're

200

00:08:15,029 --> 00:08:13,430

just quickly we follow your tweets here

201
00:08:16,950 --> 00:08:15,039
at the weather channel just a favorite

202
00:08:22,790 --> 00:08:16,960
picture so far or something you're

203
00:08:27,589 --> 00:08:24,950
you know it's interesting i

204
00:08:29,189 --> 00:08:27,599
i you know i the other day i was

205
00:08:31,110 --> 00:08:29,199
realizing you know i i think i've taken

206
00:08:33,670 --> 00:08:31,120
a lot of great pictures and and every

207
00:08:35,990 --> 00:08:33,680
time i think well you know maybe there's

208
00:08:38,149 --> 00:08:36,000
nothing uh nothing new to get i'm

209
00:08:39,430 --> 00:08:38,159
pleasantly surprised so

210
00:08:41,509 --> 00:08:39,440
um

211
00:08:43,029 --> 00:08:41,519
you know i i look forward to the

212
00:08:45,590 --> 00:08:43,039
opportunity to

213
00:08:47,430 --> 00:08:45,600

to get some uh you know future amazing

214

00:08:49,350 --> 00:08:47,440

shots of earth and uh

215

00:08:51,110 --> 00:08:49,360

so far it hasn't disappointed so who

216

00:08:58,870 --> 00:08:51,120

knows what i'll well what i'll see here

217

00:09:02,389 --> 00:09:00,790

we wish you the best sir we are watching

218

00:09:04,150 --> 00:09:02,399

your every move we're following your

219

00:09:06,790 --> 00:09:04,160

every tweet we hope this is a complete

220

00:09:08,870 --> 00:09:06,800

success for you and for nasa and we just

221

00:09:12,230 --> 00:09:08,880

want you back home safe and down sir so

222

00:09:17,269 --> 00:09:14,470

oh my my pleasure thanks uh for talking

223

00:09:21,269 --> 00:09:19,509

station this is houston acr that

224

00:09:23,590 --> 00:09:21,279

concludes the weather channel portion of

225

00:09:27,350 --> 00:09:23,600

the event please stand by for a voice

226

00:09:29,110 --> 00:09:27,360

check from cnn international

227

00:09:34,070 --> 00:09:29,120

please stand by for a voice check from

228

00:09:39,590 --> 00:09:36,310

station this is cnn international how do

229

00:09:39,600 --> 00:09:44,710

i hear you loud and clear how may

230

00:09:49,829 --> 00:09:47,030

i hear you loud and clear how me

231

00:09:52,470 --> 00:09:49,839

hi there it's robin kerner here uh

232

00:09:58,389 --> 00:09:52,480

you've been up there a few times

233

00:10:01,670 --> 00:10:00,470

you know when i got here i was surprised

234

00:10:03,430 --> 00:10:01,680

at how

235

00:10:05,030 --> 00:10:03,440

you know familiar the environment was

236

00:10:06,710 --> 00:10:05,040

how the space station didn't seem to

237

00:10:09,590 --> 00:10:06,720

have changed the whole lot

238

00:10:11,990 --> 00:10:09,600

um you know the size and shape and the

239

00:10:14,310 --> 00:10:12,000

the condition of uh most of the hardware

240

00:10:15,990 --> 00:10:14,320

was pretty similar so it was a a pretty

241

00:10:17,430 --> 00:10:16,000

uh pleasant surprise you know the big

242

00:10:24,550 --> 00:10:17,440

difference is i'm just gonna be here a

243

00:10:28,710 --> 00:10:26,630

well tell us about that you're going to

244

00:10:31,030 --> 00:10:28,720

be there for a year

245

00:10:33,269 --> 00:10:31,040

what what is it about your trip your

246

00:10:35,110 --> 00:10:33,279

length of stay that is just so important

247

00:10:40,230 --> 00:10:35,120

it's about analyzing how your body

248

00:10:45,190 --> 00:10:42,069

well you know we've been flying in space

249

00:10:47,269 --> 00:10:45,200

uh you know for many years now and

250

00:10:49,990 --> 00:10:47,279

our experience based on the space

251
00:10:52,630 --> 00:10:50,000
station from a u.s perspective has been

252
00:10:54,949 --> 00:10:52,640
a little bit over 200 days the

253
00:10:57,430 --> 00:10:54,959
the uh the russians had flown you know

254
00:10:59,670 --> 00:10:57,440
flights of a year or a little more

255
00:11:01,030 --> 00:10:59,680
on the mir space station but

256
00:11:02,069 --> 00:11:01,040
you know that was many years ago and

257
00:11:04,389 --> 00:11:02,079
back then

258
00:11:05,990 --> 00:11:04,399
we didn't have the same technology not

259
00:11:07,590 --> 00:11:06,000
only the russians didn't but the united

260
00:11:09,590 --> 00:11:07,600
states didn't as well with regards to

261
00:11:12,870 --> 00:11:09,600
our ability to collect

262
00:11:15,190 --> 00:11:12,880
data on ourselves about how

263
00:11:17,110 --> 00:11:15,200

our bodies are affected for long periods

264

00:11:19,430 --> 00:11:17,120

of time in space and there are negative

265

00:11:20,870 --> 00:11:19,440

effects but you know we need to learn

266

00:11:22,470 --> 00:11:20,880

what those are we need to learn if there

267

00:11:24,389 --> 00:11:22,480

are any cliffs out there you know if

268

00:11:26,710 --> 00:11:24,399

there's any uh

269

00:11:28,870 --> 00:11:26,720

you know a length of stay that has such

270

00:11:31,350 --> 00:11:28,880

a negative effect that it becomes

271

00:11:33,269 --> 00:11:31,360

drastically worse at a certain

272

00:11:35,110 --> 00:11:33,279

uh number of days in space and that's

273

00:11:37,110 --> 00:11:35,120

what we're doing we're trying to learn

274

00:11:39,030 --> 00:11:37,120

you know what those things are what the

275

00:11:41,509 --> 00:11:39,040

effects of the radiation environment the

276

00:11:44,069 --> 00:11:41,519

microgravity environment is the effects

277

00:11:45,350 --> 00:11:44,079

on our cognition and our ability to

278

00:11:47,269 --> 00:11:45,360

perform

279

00:11:49,030 --> 00:11:47,279

so it's uh you know it's a pretty big

280

00:11:51,110 --> 00:11:49,040

science experiment and it's very

281

00:11:57,829 --> 00:11:51,120

important to our future to go further

282

00:12:01,750 --> 00:11:59,670

i want to talk about that in a moment

283

00:12:03,670 --> 00:12:01,760

but the specifics i mean how are you

284

00:12:05,750 --> 00:12:03,680

feeling this what are you expecting to

285

00:12:07,590 --> 00:12:05,760

feel after a year in space and

286

00:12:09,190 --> 00:12:07,600

simultaneously your twin brother on

287

00:12:11,350 --> 00:12:09,200

earth has also

288

00:12:14,150 --> 00:12:11,360

been checked and poked and prodded i

289

00:12:16,230 --> 00:12:14,160

mean give us a sense of this massive

290

00:12:20,389 --> 00:12:16,240

intergalactic science experiment that's

291

00:12:24,230 --> 00:12:21,750

well you know there are there are the

292

00:12:26,230 --> 00:12:24,240

effects on this environment that that we

293

00:12:28,710 --> 00:12:26,240

notice and then there are the effects

294

00:12:30,870 --> 00:12:28,720

that we don't notice and you can only

295

00:12:33,350 --> 00:12:30,880

uh learn what those are or understand

296

00:12:35,350 --> 00:12:33,360

them by collecting data and

297

00:12:36,790 --> 00:12:35,360

you know the ones you notice are effects

298

00:12:39,269 --> 00:12:36,800

on your vision

299

00:12:41,590 --> 00:12:39,279

uh you notice uh at certain times

300

00:12:44,389 --> 00:12:41,600

especially early on a fullness in your

301
00:12:47,110 --> 00:12:44,399
in your head you notice effects to your

302
00:12:50,230 --> 00:12:47,120
digestive system because that uses uh

303
00:12:51,350 --> 00:12:50,240
uses gravity is important to that

304
00:12:53,509 --> 00:12:51,360
um

305
00:12:56,790 --> 00:12:53,519
you know physically you feel after a

306
00:13:00,069 --> 00:12:56,800
while you feel pretty good um you have

307
00:13:01,990 --> 00:13:00,079
the opportunity to to exercise uh fairly

308
00:13:04,150 --> 00:13:02,000
often which is important

309
00:13:06,550 --> 00:13:04,160
um but like i said there are the effects

310
00:13:09,190 --> 00:13:06,560
you don't you don't see and those are

311
00:13:11,910 --> 00:13:09,200
the effects of radiation on you uh

312
00:13:14,069 --> 00:13:11,920
you know on a genetic level uh you know

313
00:13:17,110 --> 00:13:14,079

the loss of of uh

314

00:13:19,430 --> 00:13:17,120

bone mass that we experience

315

00:13:21,670 --> 00:13:19,440

uh structural changes in our eyes for

316

00:13:23,509 --> 00:13:21,680

instance effects on our immune system

317

00:13:25,670 --> 00:13:23,519

and that's uh you know that's one of the

318

00:13:27,670 --> 00:13:25,680

reasons why or you know the main reason

319

00:13:30,310 --> 00:13:27,680

why misha and i are here for so long to

320

00:13:32,150 --> 00:13:30,320

understand those and then you mentioned

321

00:13:34,230 --> 00:13:32,160

my brother you know the fact that we're

322

00:13:35,750 --> 00:13:34,240

both identical twins and nasa has a long

323

00:13:39,509 --> 00:13:35,760

history on us

324

00:13:41,110 --> 00:13:39,519

and uh with regards to our medical data

325

00:13:43,110 --> 00:13:41,120

it was a uh you know a perfect

326

00:13:44,230 --> 00:13:43,120

opportunity for them to collect data on

327

00:13:46,629 --> 00:13:44,240

my brother

328

00:13:49,350 --> 00:13:46,639

and uh also on me while i'm here and

329

00:13:51,189 --> 00:13:49,360

compare the two of us on more of a

330

00:13:53,350 --> 00:13:51,199

genetic level with

331

00:13:55,269 --> 00:13:53,360

respect to any damage that might occur

332

00:13:58,389 --> 00:13:55,279

to my dna

333

00:14:05,030 --> 00:13:58,399

and rna compared to his experience on

334

00:14:13,990 --> 00:14:07,430

and is this all about

335

00:14:18,310 --> 00:14:15,590

well i wouldn't say it's all about that

336

00:14:20,550 --> 00:14:18,320

but it's uh it's definitely about uh

337

00:14:23,990 --> 00:14:20,560

understanding how to live and work in

338

00:14:24,790 --> 00:14:24,000

space for longer periods of time uh you

339

00:14:32,710 --> 00:14:24,800

know

340

00:14:33,990 --> 00:14:32,720

our path in our future but uh perhaps

341

00:14:35,430 --> 00:14:34,000

elsewhere

342

00:14:37,750 --> 00:14:35,440

um

343

00:14:39,750 --> 00:14:37,760

and this is a you know the space station

344

00:14:41,750 --> 00:14:39,760

program and our i guess our you know our

345

00:14:44,230 --> 00:14:41,760

collective history in space is a start

346

00:14:46,150 --> 00:14:44,240

and this is another stepping stone to to

347

00:14:48,230 --> 00:14:46,160

understanding how how to live and work

348

00:14:54,870 --> 00:14:48,240

in space for longer periods so we can go

349

00:14:59,509 --> 00:14:56,870

talking about going further from our

350

00:15:02,470 --> 00:14:59,519

planet uh we've been seeing images

351

00:15:05,350 --> 00:15:02,480

uh of great celebrations at nasa the

352

00:15:07,030 --> 00:15:05,360

first space probe uh ever to get fly by

353

00:15:09,670 --> 00:15:07,040

pluto seeing some extraordinary

354

00:15:14,150 --> 00:15:09,680

photographs what do you make of this

355

00:15:19,750 --> 00:15:16,230

you know i'm just so impressed and you

356

00:15:21,829 --> 00:15:19,760

know proud to be part of an organization

357

00:15:23,590 --> 00:15:21,839

and part of a country uh you know a

358

00:15:25,030 --> 00:15:23,600

citizen of a country that can send a

359

00:15:28,389 --> 00:15:25,040

spacecraft

360

00:15:30,310 --> 00:15:28,399

over that distance three billion miles

361

00:15:32,470 --> 00:15:30,320

over a period of uh

362

00:15:33,990 --> 00:15:32,480

of nine years

363

00:15:36,389 --> 00:15:34,000

to a

364

00:15:37,590 --> 00:15:36,399

planet that is much smaller than earth's

365

00:15:42,069 --> 00:15:37,600

moon

366

00:15:43,990 --> 00:15:42,079

and fly within 7 000 miles of it and you

367

00:15:46,870 --> 00:15:44,000

know it's just amazing and it's and it's

368

00:15:48,389 --> 00:15:46,880

an achievement that you know no country

369

00:15:49,910 --> 00:15:48,399

on earth has ever been able to

370

00:15:51,509 --> 00:15:49,920

accomplish before

371

00:15:53,350 --> 00:15:51,519

and so it makes me just proud to be an

372

00:15:55,189 --> 00:15:53,360

american today and i think you know the

373

00:15:57,670 --> 00:15:55,199

people at nasa that's worked worked on

374

00:15:59,829 --> 00:15:57,680

this project for so long really need to

375

00:16:08,150 --> 00:15:59,839

be uh congratulated and i congratulate

376

00:16:11,990 --> 00:16:10,230

of course there are many questions i

377

00:16:14,389 --> 00:16:12,000

would want to ask you but we also put it

378

00:16:15,110 --> 00:16:14,399

out to twitter and we had some questions

379

00:16:17,030 --> 00:16:15,120

that

380

00:16:19,110 --> 00:16:17,040

ordinary people here back on earth want

381

00:16:23,030 --> 00:16:19,120

to know and two young boys

382

00:16:24,870 --> 00:16:23,040

uh asked their mum to ask me to ask you

383

00:16:28,870 --> 00:16:24,880

how do you brush your teeth on the space

384

00:16:34,870 --> 00:16:29,829

you know

385

00:16:36,550 --> 00:16:34,880

know there's no sink here so

386

00:16:38,790 --> 00:16:36,560

it's not like you can fill your mouth

387

00:16:40,870 --> 00:16:38,800

with with water and and spit the

388

00:16:43,749 --> 00:16:40,880

toothpaste down the drain

389

00:16:45,189 --> 00:16:43,759

yeah some people spit it out into a uh

390

00:16:48,310 --> 00:16:45,199

you know they brush their teeth with you

391

00:16:50,470 --> 00:16:48,320

know so uh with toothpaste and uh

392

00:16:52,710 --> 00:16:50,480

and maybe some water and then you have

393

00:16:55,350 --> 00:16:52,720

two options one you can spit it into a

394

00:16:56,470 --> 00:16:55,360

towel which is somewhat messy or into a

395

00:16:58,949 --> 00:16:56,480

napkin

396

00:17:01,269 --> 00:16:58,959

the other is you could swallow it

397

00:17:03,670 --> 00:17:01,279

and i would not recommend to any kids

398

00:17:05,429 --> 00:17:03,680

swallowing it or any person swallowing

399

00:17:06,870 --> 00:17:05,439

toothpaste for that long a period of

400

00:17:08,390 --> 00:17:06,880

time but uh

401
00:17:10,230 --> 00:17:08,400
you know i'm i'm one of the people that

402
00:17:11,510 --> 00:17:10,240
just swallow it i don't know

403
00:17:13,189 --> 00:17:11,520
if it's uh

404
00:17:14,789 --> 00:17:13,199
there any negative effects to that but

405
00:17:15,429 --> 00:17:14,799
i've been doing it for a long time and

406
00:17:24,870 --> 00:17:15,439
it

407
00:17:28,630 --> 00:17:26,710
and and i'm sure some of these kids

408
00:17:30,950 --> 00:17:28,640
would also be interested to know how you

409
00:17:35,590 --> 00:17:30,960
make your own water up there on the

410
00:17:40,950 --> 00:17:37,950
yeah so we have a very uh very

411
00:17:42,950 --> 00:17:40,960
sophisticated system that takes uh the

412
00:17:44,549 --> 00:17:42,960
the humidity in the air and it also

413
00:17:46,789 --> 00:17:44,559

takes our urine

414

00:17:49,990 --> 00:17:46,799

and it uh you know

415

00:17:52,230 --> 00:17:50,000

process it processes it through a uh a

416

00:17:53,590 --> 00:17:52,240

condens a condenser kind of system and

417

00:17:55,909 --> 00:17:53,600

some filters

418

00:17:57,350 --> 00:17:55,919

and it turns it into drinking water and

419

00:17:59,029 --> 00:17:57,360

surprisingly

420

00:18:01,110 --> 00:17:59,039

when we turn the urine into drinking

421

00:18:03,029 --> 00:18:01,120

water and we turn the the humidity in

422

00:18:05,110 --> 00:18:03,039

the air into drinking water the urine

423

00:18:07,750 --> 00:18:05,120

actually makes better water than the

424

00:18:10,230 --> 00:18:07,760

humidity for some reason but it's uh

425

00:18:12,390 --> 00:18:10,240

it's great water it uh you know takes

426

00:18:14,630 --> 00:18:12,400

tastes better than the water that comes

427

00:18:16,950 --> 00:18:14,640

out of the sink at my home in houston

428

00:18:19,510 --> 00:18:16,960

texas and i have no problem drinking it

429

00:18:21,430 --> 00:18:19,520

and it's a great capability we have here

430

00:18:23,830 --> 00:18:21,440

and it's a capability that's been you

431

00:18:32,230 --> 00:18:23,840

know have spin-off technologies on earth

432

00:18:38,470 --> 00:18:33,830

another twitter question why are you

433

00:18:42,950 --> 00:18:40,470

yeah so uh you know one's a watch that

434

00:18:45,430 --> 00:18:42,960

has uh the time we use which is uh

435

00:18:47,590 --> 00:18:45,440

greenwich mean time um

436

00:18:50,070 --> 00:18:47,600

on board the space station it's got a

437

00:18:51,350 --> 00:18:50,080

nice alarm it's got uh

438

00:18:53,190 --> 00:18:51,360

a uh

439

00:18:55,270 --> 00:18:53,200
you know a light that you can

440

00:18:57,909 --> 00:18:55,280
see around a little bit but the the

441

00:18:59,510 --> 00:18:57,919
other watch is a sleep study uh watch

442

00:19:02,150 --> 00:18:59,520
that measures light

443

00:19:04,470 --> 00:19:02,160
and uh it measures acceleration so it

444

00:19:07,190 --> 00:19:04,480
can tell when i'm moving so basically

445

00:19:10,310 --> 00:19:07,200
you can tell when i'm asleep and uh you

446

00:19:12,710 --> 00:19:10,320
know people have issues sleeping in

447

00:19:14,789 --> 00:19:12,720
microgravity or in you know probably

448

00:19:16,950 --> 00:19:14,799
stressful high stress environments for

449

00:19:19,590 --> 00:19:16,960
that matter so this is a part of a

450

00:19:21,990 --> 00:19:19,600
scientific study to just measure how uh

451

00:19:24,230 --> 00:19:22,000

how our sleep is

452

00:19:31,190 --> 00:19:24,240

conducted over the period of the course

453

00:19:31,200 --> 00:19:36,310

thank you very much sir good luck

454

00:19:41,430 --> 00:19:39,750

oh nice talking you today