



SPACESTATION
LIVE

1
00:00:09,750 --> 00:00:07,749
doctor by day astronaut by night dr

2
00:00:12,310 --> 00:00:09,760
lindgren joins me now been on the space

3
00:00:13,669 --> 00:00:12,320
station for nearly five months came back

4
00:00:15,589 --> 00:00:13,679
in december

5
00:00:17,590 --> 00:00:15,599
you've helped folks here on earth every

6
00:00:19,189 --> 00:00:17,600
day right as being a doctor but how are

7
00:00:21,429 --> 00:00:19,199
you helping folks on earth from space

8
00:00:22,870 --> 00:00:21,439
absolutely well i mean that was uh the

9
00:00:24,070 --> 00:00:22,880
reason that we go to the international

10
00:00:26,150 --> 00:00:24,080
space station the reason that we're

11
00:00:27,589 --> 00:00:26,160
spending five months six months a year

12
00:00:30,630 --> 00:00:27,599
on the space station is to conduct

13
00:00:32,310 --> 00:00:30,640

science and research um that is helping

14

00:00:33,270 --> 00:00:32,320

us extend our presence in the solar

15

00:00:35,830 --> 00:00:33,280

system

16

00:00:37,190 --> 00:00:35,840

hopefully onward to mars but also to

17

00:00:38,790 --> 00:00:37,200

benefit

18

00:00:40,389 --> 00:00:38,800

life back here on earth

19

00:00:42,790 --> 00:00:40,399

any experiments in particular that you

20

00:00:45,750 --> 00:00:42,800

recall performing that that are really

21

00:00:48,069 --> 00:00:45,760

part of that well um as you mentioned uh

22

00:00:50,229 --> 00:00:48,079

my background is as a physician and so

23

00:00:52,069 --> 00:00:50,239

the life sciences research was of

24

00:00:53,990 --> 00:00:52,079

particular interest to me and so we have

25

00:00:56,229 --> 00:00:54,000

an ultrasound machine up there uh that

26
00:00:57,910 --> 00:00:56,239
we looked at the eyes at our hearts and

27
00:01:00,470 --> 00:00:57,920
our blood vessels

28
00:01:03,270 --> 00:01:00,480
we we took blood to look at how

29
00:01:06,149 --> 00:01:03,280
radiation affects dna

30
00:01:08,550 --> 00:01:06,159
and we do x-rays before after

31
00:01:10,950 --> 00:01:08,560
our flight to understand how space

32
00:01:13,109 --> 00:01:10,960
flight is affecting our bones

33
00:01:15,190 --> 00:01:13,119
all of these things reveal things about

34
00:01:17,109 --> 00:01:15,200
uh living in space but also basic

35
00:01:18,710 --> 00:01:17,119
mechanisms that occur back on earth so

36
00:01:21,190 --> 00:01:18,720
bone loss

37
00:01:24,070 --> 00:01:21,200
cardiovascular deconditioning muscle

38
00:01:26,070 --> 00:01:24,080

weakening how the immune system changes

39

00:01:27,990 --> 00:01:26,080

and becomes maybe overactive or

40

00:01:29,429 --> 00:01:28,000

suppressed all those things that we see

41

00:01:31,270 --> 00:01:29,439

in space have direct implications for

42

00:01:32,390 --> 00:01:31,280

medical care back here on earth so you

43

00:01:34,069 --> 00:01:32,400

finish those when you were there but

44

00:01:35,270 --> 00:01:34,079

it'll be a while before research takes

45

00:01:36,950 --> 00:01:35,280

time so it'll be a while before we know

46

00:01:38,310 --> 00:01:36,960

the results from what absolutely you did

47

00:01:39,990 --> 00:01:38,320

but you also

48

00:01:41,670 --> 00:01:40,000

got almost immediate results you grew

49

00:01:42,710 --> 00:01:41,680

some lettuce and got to eat that right

50

00:01:45,270 --> 00:01:42,720

that's right so that was one of my

51
00:01:47,429 --> 00:01:45,280
favorite experiments um the the science

52
00:01:49,429 --> 00:01:47,439
was called veggie but our crew got to

53
00:01:51,510 --> 00:01:49,439
grow lettuce and then ultimately became

54
00:01:54,149 --> 00:01:51,520
the first us crew to get to grow to eat

55
00:01:55,749 --> 00:01:54,159
a crop that we had grown in space i had

56
00:01:57,190 --> 00:01:55,759
the great fortune of being the one to

57
00:01:59,590 --> 00:01:57,200
take care of the lettuce on a daily

58
00:02:01,190 --> 00:01:59,600
basis so this opportunity to grow a

59
00:02:03,510 --> 00:02:01,200
green living plant

60
00:02:05,749 --> 00:02:03,520
in an otherwise kind of sterile looking

61
00:02:07,429 --> 00:02:05,759
space station i think you know it's kind

62
00:02:10,229 --> 00:02:07,439
of like gardening that there's a benefit

63
00:02:12,790 --> 00:02:10,239

for for to taking care of this living

64

00:02:15,030 --> 00:02:12,800

growing thing on a day to day basis and

65

00:02:17,110 --> 00:02:15,040

then ultimately you know to get to to

66

00:02:18,710 --> 00:02:17,120

eat the lettuce demonstrated that we can

67

00:02:20,470 --> 00:02:18,720

grow a crop and eat it and i think that

68

00:02:23,750 --> 00:02:20,480

that has some far-reaching implications

69

00:02:25,350 --> 00:02:23,760

for how we might provide food supply to

70

00:02:26,550 --> 00:02:25,360

astronauts that are traveling on these

71

00:02:29,589 --> 00:02:26,560

long missions like the one that we

72

00:02:31,830 --> 00:02:29,599

expect for for mars tastes like lettuce

73

00:02:33,350 --> 00:02:31,840

it tasted just like lettuce

74

00:02:34,949 --> 00:02:33,360

that's what we want right

75

00:02:36,790 --> 00:02:34,959

so tell us about the payload operations

76
00:02:38,309 --> 00:02:36,800
integration center and how you guys work

77
00:02:40,150 --> 00:02:38,319
together i mean really to perform all of

78
00:02:41,910 --> 00:02:40,160
these experiences absolutely well the

79
00:02:44,309 --> 00:02:41,920
the payload operations integration

80
00:02:45,589 --> 00:02:44,319
center here at huntsville is integral uh

81
00:02:47,350 --> 00:02:45,599
to the work that we do on the space

82
00:02:49,270 --> 00:02:47,360
station as i said the science and

83
00:02:50,790 --> 00:02:49,280
research that we do on a daily basis

84
00:02:52,949 --> 00:02:50,800
that's the reason that we're in space

85
00:02:55,270 --> 00:02:52,959
right now the folks that are a part of

86
00:02:57,430 --> 00:02:55,280
that team that larger science team are

87
00:02:59,589 --> 00:02:57,440
based here at the marshall space flight

88
00:03:01,190 --> 00:02:59,599

center and so they are the ones that

89

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

help process the science they work with

90

00:03:04,869 --> 00:03:03,519

the personal principal investigators

91

00:03:07,270 --> 00:03:04,879

they make sure that the procedures are

92

00:03:08,869 --> 00:03:07,280

good to go and and then they help us

93

00:03:10,309 --> 00:03:08,879

with troubleshooting and so there are

94

00:03:12,470 --> 00:03:10,319

days when

95

00:03:14,309 --> 00:03:12,480

i would talk with huntsville more than i

96

00:03:15,509 --> 00:03:14,319

would talk with with houston and and

97

00:03:18,710 --> 00:03:15,519

that's

98

00:03:20,869 --> 00:03:18,720

science and research on the space

99

00:03:22,630 --> 00:03:20,879

station on a daily basis and so

100

00:03:24,390 --> 00:03:22,640

it was a privilege for me to be a part

101
00:03:27,509 --> 00:03:24,400
of the huntsville team you're part of

102
00:03:29,270 --> 00:03:27,519
the family now yeah uh let's also talk

103
00:03:30,949 --> 00:03:29,280
about some visiting cargo ships while

104
00:03:33,110 --> 00:03:30,959
you were there i mean that that was a

105
00:03:35,509 --> 00:03:33,120
big deal you get fresh supplies then

106
00:03:37,030 --> 00:03:35,519
absolutely so we had four cargo vehicles

107
00:03:39,350 --> 00:03:37,040
visit the space station while i was up

108
00:03:40,949 --> 00:03:39,360
there and that was actually at the end

109
00:03:43,750 --> 00:03:40,959
of a string of mishaps that we would

110
00:03:45,589 --> 00:03:43,760
have so those cargo vehicles um were

111
00:03:46,630 --> 00:03:45,599
more important than they even usually

112
00:03:49,910 --> 00:03:46,640
are

113
00:03:52,630 --> 00:03:49,920

we had the htv the japanese or

114

00:03:53,750 --> 00:03:52,640

japanese exploration agency's cargo

115

00:03:55,589 --> 00:03:53,760

vehicle

116

00:03:58,789 --> 00:03:55,599

we had the

117

00:04:00,550 --> 00:03:58,799

orbital atk cygnus vehicle bringing up

118

00:04:02,550 --> 00:04:00,560

supplies and that arrived really just a

119

00:04:03,990 --> 00:04:02,560

day before our crew returned back to the

120

00:04:05,910 --> 00:04:04,000

earth so you can get the benefit from

121

00:04:07,750 --> 00:04:05,920

that well i got to capture the vehicle

122

00:04:09,990 --> 00:04:07,760

with a robotic arm which was absolutely

123

00:04:11,670 --> 00:04:10,000

amazing experience

124

00:04:15,589 --> 00:04:11,680

and then we really encouraged the ground

125

00:04:17,670 --> 00:04:15,599

folks to help us get the vehicle um

126

00:04:19,990 --> 00:04:17,680

attached to the space station

127

00:04:21,670 --> 00:04:20,000

uh and to to get the door the hatch open

128

00:04:23,110 --> 00:04:21,680

so that we could dive in and at least

129

00:04:24,469 --> 00:04:23,120

because we all had care packages on

130

00:04:26,390 --> 00:04:24,479

there and we at least wanted to see

131

00:04:27,670 --> 00:04:26,400

those before we left back to the earth

132

00:04:29,110 --> 00:04:27,680

but you left it a good time because

133

00:04:31,270 --> 00:04:29,120

everyone else had to unload it right

134

00:04:33,670 --> 00:04:31,280

that's right yeah so we got to enjoy all

135

00:04:35,110 --> 00:04:33,680

the the fun of docking the vehicle

136

00:04:36,230 --> 00:04:35,120

capturing and docking the vehicle and

137

00:04:38,950 --> 00:04:36,240

then

138

00:04:40,070 --> 00:04:38,960

else had to do the work but that's all

139

00:04:42,070 --> 00:04:40,080

right

140

00:04:43,670 --> 00:04:42,080

that's okay that's like you were here

141

00:04:45,110 --> 00:04:43,680

today to talk to a bunch of students

142

00:04:47,270 --> 00:04:45,120

they're probably future rocket

143

00:04:48,550 --> 00:04:47,280

scientists building rockets how do you

144

00:04:50,469 --> 00:04:48,560

inspire

145

00:04:51,270 --> 00:04:50,479

these young people to do what you've

146

00:04:53,189 --> 00:04:51,280

done

147

00:04:55,270 --> 00:04:53,199

well i'm inspired by them i mean the

148

00:04:57,030 --> 00:04:55,280

opportunity to talk with 800 budding

149

00:04:58,870 --> 00:04:57,040

rocket scientists was an amazing

150

00:05:00,150 --> 00:04:58,880

experience for me because i got to look

151
00:05:02,230 --> 00:05:00,160
out on that crowd and really see the

152
00:05:03,430 --> 00:05:02,240
future of our space program

153
00:05:05,270 --> 00:05:03,440
these are the folks that are going to be

154
00:05:07,029 --> 00:05:05,280
building the rockets that take us to to

155
00:05:08,870 --> 00:05:07,039
mars and beyond

156
00:05:11,510 --> 00:05:08,880
there are people in this audience that

157
00:05:13,430 --> 00:05:11,520
may well be the individual that takes

158
00:05:15,189 --> 00:05:13,440
that first step on mars and so for me it

159
00:05:17,110 --> 00:05:15,199
was inspiring to be here

160
00:05:18,950 --> 00:05:17,120
i just wanted to share my experience to

161
00:05:20,950 --> 00:05:18,960
let them know that they can make their

162
00:05:22,950 --> 00:05:20,960
dreams come true

163
00:05:25,350 --> 00:05:22,960

and to encourage them to really chase

164

00:05:27,029 --> 00:05:25,360

after those dreams lastly a dream of

165

00:05:28,629 --> 00:05:27,039

mine would be to be out in space on a

166

00:05:30,550 --> 00:05:28,639

spacewalk like you were did you just

167

00:05:34,469 --> 00:05:30,560

stand up and go check me out i mean what

168

00:05:38,629 --> 00:05:36,390

you were busy we were so busy during our

169

00:05:42,469 --> 00:05:38,639

spacewalks and absolutely

170

00:05:43,430 --> 00:05:42,479

amazing experience and one that i will

171

00:05:44,950 --> 00:05:43,440

just

172

00:05:46,550 --> 00:05:44,960

forever appreciate

173

00:05:48,469 --> 00:05:46,560

but it's incredibly hard work and i

174

00:05:49,909 --> 00:05:48,479

think you know we trained for hundreds

175

00:05:51,110 --> 00:05:49,919

of hours in our neutral buoyancy

176

00:05:52,390 --> 00:05:51,120

laboratory

177

00:05:54,629 --> 00:05:52,400

back in houston

178

00:05:56,710 --> 00:05:54,639

to to do those uh very difficult and

179

00:05:57,909 --> 00:05:56,720

dangerous activities

180

00:06:00,469 --> 00:05:57,919

so i'm grateful that we had the

181

00:06:02,390 --> 00:06:00,479

opportunity um and it was amazing to be

182

00:06:05,110 --> 00:06:02,400

able to do it safely successfully and

183

00:06:07,270 --> 00:06:05,120

then to get back inside want to go back

184

00:06:08,710 --> 00:06:07,280

i would love to all right we'll see