



NASA

1
00:00:04,170 --> 00:00:05,638
>> HELLO.

2
00:00:05,638 --> 00:00:07,307
GOOD MORNING, EVERYONE

3
00:00:07,307 --> 00:00:09,642
MY NAME IS ABIGAIL RODRIGUEZ,

4
00:00:09,642 --> 00:00:10,944
AND I WILL BE THE HOST

5
00:00:10,944 --> 00:00:13,346
OF TODAY'S OHIO ISS

6
00:00:13,346 --> 00:00:15,749
EDUCATIONAL DOWNLINK EVENT.

7
00:00:15,749 --> 00:00:17,350
I WANT TO WELCOME EVERYONE

8
00:00:17,350 --> 00:00:19,452
THAT HAS JOINED US VIRTUALLY,

9
00:00:19,452 --> 00:00:22,756
INCLUDING THE IPROMISE SCHOOL,

10
00:00:22,756 --> 00:00:23,490
CLEVELAND SCHOOL

11
00:00:23,490 --> 00:00:25,792
OF SCIENCE AND MEDICINE,

12
00:00:25,792 --> 00:00:27,961
HORIZONS SCIENCE ACADEMY,

13
00:00:27,961 --> 00:00:29,696

DENISON MIDDLE SCHOOL,

14

00:00:29,696 --> 00:00:31,731

THE GINN ACADEMY,

15

00:00:31,731 --> 00:00:34,067

ADMIRAL KING ELEMENTARY,

16

00:00:34,067 --> 00:00:36,703

PARMA COMMUNITY MIDDLE SCHOOL,

17

00:00:36,703 --> 00:00:38,138

WARRENSVILLE HEIGHTS

18

00:00:38,138 --> 00:00:39,572

ELEMENTARY SCHOOL,

19

00:00:39,572 --> 00:00:41,074

AND OUR PARTNERS AT

20

00:00:41,074 --> 00:00:43,143

THE GREAT LAKES SCIENCE CENTER,

21

00:00:43,143 --> 00:00:45,078

HOME OF OUR NASA GLENN

22

00:00:45,078 --> 00:00:46,379

VISITORS' CENTER

23

00:00:46,379 --> 00:00:48,114

WHO ARE HOSTING FIRST

24

00:00:48,114 --> 00:00:49,149

ROBOTICS TEAMS

25

00:00:49,149 --> 00:00:51,985

FROM JOHN MARSHALL SCHOOL

26
00:00:51,985 --> 00:00:54,421
OF INFORMATION TECHNOLOGY,

27
00:00:54,421 --> 00:00:57,257
EAST TECHNICAL HIGH SCHOOL,

28
00:00:57,257 --> 00:01:00,059
MC2 STEM HIGH SCHOOL,

29
00:01:00,059 --> 00:01:01,428
AND DAVIS AEROSPACE

30
00:01:01,428 --> 00:01:03,296
AND MARITIME HIGH SCHOOL.

31
00:01:03,296 --> 00:01:04,798
WELCOME, EVERYONE.

32
00:01:04,798 --> 00:01:06,933
WE HAVE AN EXCITING PROGRAM

33
00:01:06,933 --> 00:01:08,935
FOR ALL OF YOU TODAY

34
00:01:08,935 --> 00:01:11,304
WHICH INCLUDES OUR FEATURED

35
00:01:11,304 --> 00:01:13,173
LIFE DOWNLINK CONNECTION

36
00:01:13,173 --> 00:01:14,174
TO THE INTERNATIONAL

37
00:01:14,174 --> 00:01:15,575
SPACE STATION,

38
00:01:15,575 --> 00:01:17,844

A PRESENTATION AND Q&A

39
00:01:17,844 --> 00:01:20,580
WITH ASTRONAUT STEPHANIE WILSON,

40
00:01:20,580 --> 00:01:23,049
A HANDS-ON ACTIVITY SESSION,

41
00:01:23,049 --> 00:01:24,918
AND A PREVIEW OF THE UPCOMING

42
00:01:24,918 --> 00:01:26,953
LAUNCH OF ARTEMIS-I,

43
00:01:26,953 --> 00:01:28,955
THE FIRST LAUNCH OF NASA'S

44
00:01:28,955 --> 00:01:31,324
SPACE LAUNCH SYSTEM ROCKET

45
00:01:31,324 --> 00:01:32,759
CARRYING THE OHIO--

46
00:01:32,759 --> 00:01:34,594
THE ORION SPACECRAFT

47
00:01:34,594 --> 00:01:36,729
THAT WILL KICK OFF NASA'S RETURN

48
00:01:36,729 --> 00:01:38,998
TO THE MOON AND BEYOND.

49
00:01:38,998 --> 00:01:40,300
AT THIS TIME,

50
00:01:40,300 --> 00:01:41,835
I WOULD LIKE TO INTRODUCE

51
00:01:41,835 --> 00:01:44,103
SEVERAL KEY LEADERS.

52
00:01:44,103 --> 00:01:46,506
DR. MARLA PEREZ-DAVIS,

53
00:01:46,506 --> 00:01:48,374
DIRECTOR OF NASA'S GLENN

54
00:01:48,374 --> 00:01:50,009
RESEARCH CENTER.

55
00:01:50,009 --> 00:01:52,579
THE HONORABLE MIKE DEWINE,

56
00:01:52,579 --> 00:01:54,481
THE GOVERNOR OF OHIO.

57
00:01:54,481 --> 00:01:56,816
AND THE HONORABLE JUSTIN BIBB,

58
00:01:56,816 --> 00:01:58,485
THE MAYOR OF THE CITY

59
00:01:58,485 --> 00:01:59,519
OF CLEVELAND

60
00:01:59,519 --> 00:02:01,054
WHO WILL BE PROVIDING

61
00:02:01,054 --> 00:02:05,325
OPENING REMARKS.

62
00:02:05,325 --> 00:02:06,626
>> GOOD MORNING, STUDENTS,

63
00:02:06,626 --> 00:02:07,327

AND WELCOME TO OUR

64

00:02:07,327 --> 00:02:09,062

INTERNATIONAL SPACE STATION

65

00:02:09,062 --> 00:02:11,698

EDUCATIONAL DOWNLINK EVENT.

66

00:02:11,698 --> 00:02:13,500

I AM DR. MARLA PEREZ-DAVIS,

67

00:02:13,500 --> 00:02:14,767

THE DIRECTOR OF NASA'S

68

00:02:14,767 --> 00:02:16,503

GLENN RESEARCH CENTER,

69

00:02:16,503 --> 00:02:17,170

AND I WOULD LIKE

70

00:02:17,170 --> 00:02:18,705

TO CONGRATULATE YOU

71

00:02:18,705 --> 00:02:19,906

FOR TAKING THE OPPORTUNITY

72

00:02:19,906 --> 00:02:20,807

TO JOIN US

73

00:02:20,807 --> 00:02:22,275

FOR THIS SPECIAL EVENT WITH

74

00:02:22,275 --> 00:02:24,944

NASA ASTRONAUT STEPHANIE WILSON

75

00:02:24,944 --> 00:02:26,079

AND THE OTHER ASTRONAUTS

76

00:02:26,079 --> 00:02:26,880

CURRENTLY FLYING

77

00:02:26,880 --> 00:02:29,015

ON THE SPACE STATION.

78

00:02:29,015 --> 00:02:30,250

DURING THIS EVENT,

79

00:02:30,250 --> 00:02:31,284

YOU ARE GOING TO LEARN ABOUT

80

00:02:31,284 --> 00:02:32,819

LIVING AND WORKING IN SPACE

81

00:02:32,819 --> 00:02:34,254

DIRECTLY FROM THE ASTRONAUTS

82

00:02:34,254 --> 00:02:35,588

THEMSELVES.

83

00:02:35,588 --> 00:02:37,056

FOR MORE THAN 80 YEARS,

84

00:02:37,056 --> 00:02:37,757

NASA GLENN

85

00:02:37,757 --> 00:02:39,158

AND THE STATE OF OHIO

86

00:02:39,158 --> 00:02:40,126

HAVE BEEN CONTRIBUTING

87

00:02:40,126 --> 00:02:41,427

TO SPACE EXPLORATION

88

00:02:41,427 --> 00:02:43,062

AND AVIATION.

89

00:02:43,062 --> 00:02:44,631

OUR SPACE EXPLORATION EFFORT

90

00:02:44,631 --> 00:02:46,866

STARTED ABOUT 260 MILES

91

00:02:46,866 --> 00:02:48,568

ABOVE OUR HEAD

92

00:02:48,568 --> 00:02:50,003

ORBITING AROUND THE EARTH

93

00:02:50,003 --> 00:02:51,371

ABOARD THE INTERNATIONAL

94

00:02:51,371 --> 00:02:53,239

SPACE STATION.

95

00:02:53,239 --> 00:02:54,474

NASA GLENN SUPPORTS

96

00:02:54,474 --> 00:02:55,742

SEVERAL EXPERIMENTS

97

00:02:55,742 --> 00:02:57,010

ON THE SPACE STATION

98

00:02:57,010 --> 00:02:58,278

FOCUSED ON BUILDING

99

00:02:58,278 --> 00:02:59,579

LIFE SUPPORT SYSTEMS,

100

00:02:59,579 --> 00:03:01,047

MEDICAL DEVICES,

101
00:03:01,047 --> 00:03:02,382
EXERCISE EQUIPMENT

102
00:03:02,382 --> 00:03:03,950
THAT WILL HELP OUR ASTRONAUTS

103
00:03:03,950 --> 00:03:05,018
LIVE FOR LONG PERIODS

104
00:03:05,018 --> 00:03:05,919
ON THE MOON

105
00:03:05,919 --> 00:03:07,921
AND EVENTUALLY MARS.

106
00:03:07,921 --> 00:03:09,622
WE'RE ALSO STUDYING HOW FLUIDS

107
00:03:09,622 --> 00:03:10,690
AND FIRE ACT

108
00:03:10,690 --> 00:03:12,659
IN MICROGRAVITY.

109
00:03:12,659 --> 00:03:14,227
BY UNDERSTANDING HOW THEY BEHAVE

110
00:03:14,227 --> 00:03:15,194
IN SPACE,

111
00:03:15,194 --> 00:03:16,229
WE CAN IMPROVE FLIGHT

112
00:03:16,229 --> 00:03:17,564
SYSTEM PERFORMANCE,

113
00:03:17,564 --> 00:03:18,464

FIRE DETECTION

114

00:03:18,464 --> 00:03:20,967

AND PREVENTION TECHNOLOGIES.

115

00:03:20,967 --> 00:03:22,168

THE LESSONS WE LEARN

116

00:03:22,168 --> 00:03:23,002

AND THE TECHNOLOGIES

117

00:03:23,002 --> 00:03:25,038

WE DEVELOP ON SPACE STATION

118

00:03:25,038 --> 00:03:26,472

ARE HELPING PREPARE NASA

119

00:03:26,472 --> 00:03:27,407

TO SEND ASTRONAUTS

120

00:03:27,407 --> 00:03:28,374

BACK TO THE MOON

121

00:03:28,374 --> 00:03:30,577

FOR THE FIRST TIME IN 50 YEARS,

122

00:03:30,577 --> 00:03:31,444

AND THIS TIME,

123

00:03:31,444 --> 00:03:32,879

IT IS NOT JUST ABOUT FLAGS

124

00:03:32,879 --> 00:03:34,414

AND FOOTPRINTS.

125

00:03:34,414 --> 00:03:36,449

WE CALL THIS EFFORT ARTEMIS,

126
00:03:36,449 --> 00:03:37,584
AND WE ARE GOING TO SEND

127
00:03:37,584 --> 00:03:38,585
THE FIRST WOMAN

128
00:03:38,585 --> 00:03:39,886
AND THE FIRST PERSON OF COLOR

129
00:03:39,886 --> 00:03:40,720
TO THE MOON

130
00:03:40,720 --> 00:03:41,854
AS WE WORK TO ESTABLISH

131
00:03:41,854 --> 00:03:43,823
A LONG TERM HUMAN PRESENCE

132
00:03:43,823 --> 00:03:45,692
ON OR AROUND THE MOON.

133
00:03:45,692 --> 00:03:46,659
NASA GLENN PLAYS

134
00:03:46,659 --> 00:03:48,928
A SIGNIFICANT ROLE IN ARTEMIS,

135
00:03:48,928 --> 00:03:50,229
INCLUDING HARDWARE DEVELOPMENT

136
00:03:50,229 --> 00:03:50,863
AND TESTING

137
00:03:50,863 --> 00:03:52,765
FOR THE ORION SPACECRAFT,

138
00:03:52,765 --> 00:03:54,434

THE SPACE LAUNCH SYSTEM ROCKET,

139

00:03:54,434 --> 00:03:55,868

AND THE LUNAR OUTPOST

140

00:03:55,868 --> 00:03:58,004

WE CALL GATEWAY.

141

00:03:58,004 --> 00:03:59,839

WE WILL USE WHAT WE LEARN

142

00:03:59,839 --> 00:04:00,773

ON THE MOON

143

00:04:00,773 --> 00:04:01,541

ON THE ARTEMIS

144

00:04:01,541 --> 00:04:03,209

TO PREPARE FOR HUMANITY'S

145

00:04:03,209 --> 00:04:04,711

NEXT GIANT LEAP--

146

00:04:04,711 --> 00:04:07,280

SENDING ASTRONAUTS TO MARS.

147

00:04:07,280 --> 00:04:08,648

WITHOUT A DOUBT, THE JOURNEYS

148

00:04:08,648 --> 00:04:09,716

TO THE MOON AND MARS

149

00:04:09,716 --> 00:04:11,384

GOES THROUGH OHIO.

150

00:04:11,384 --> 00:04:12,685

WHAT INSPIRES ME EVEN MORE

151
00:04:12,685 --> 00:04:13,886
IS THAT ALL THIS

152
00:04:13,886 --> 00:04:15,188
GROUND BREAKING RESEARCH

153
00:04:15,188 --> 00:04:16,255
AND TESTING

154
00:04:16,255 --> 00:04:17,757
ALSO MAKES LIFE BETTER

155
00:04:17,757 --> 00:04:19,826
AND SAFER HERE ON EARTH.

156
00:04:19,826 --> 00:04:21,894
HOWEVER, ALL THE GREAT WORK

157
00:04:21,894 --> 00:04:23,696
NASA IS DOING CANNOT HAPPEN

158
00:04:23,696 --> 00:04:25,431
WITHOUT TALENTED AND INSPIRED

159
00:04:25,431 --> 00:04:27,033
MINDS LIKE YOURS.

160
00:04:27,033 --> 00:04:28,134
YOU ARE WHAT WE CALL

161
00:04:28,134 --> 00:04:30,103
OUR ARTEMIS GENERATION,

162
00:04:30,103 --> 00:04:31,404
AND YOU WILL CONTINUE

163
00:04:31,404 --> 00:04:33,072

TO WORK WHERE WE HAVE STARTED

164

00:04:33,072 --> 00:04:33,806

TO MAKE SURE

165

00:04:33,806 --> 00:04:36,643

WE ARE SUCCESSFUL ON THE MOON,

166

00:04:36,643 --> 00:04:37,410

AND YOU WILL SEND

167

00:04:37,410 --> 00:04:39,646

PEOPLE TO MARS.

168

00:04:39,646 --> 00:04:41,114

BEFORE WE GET STARTED,

169

00:04:41,114 --> 00:04:42,081

I WOULD LIKE TO THANK

170

00:04:42,081 --> 00:04:44,017

SENATORS SHERROD BROWN

171

00:04:44,017 --> 00:04:45,818

AND ROB PORTMAN,

172

00:04:45,818 --> 00:04:47,920

OHIO GOVERNOR MIKE DEWINE,

173

00:04:47,920 --> 00:04:50,056

AND CLEVELAND MAYOR JUSTIN BIBB

174

00:04:50,056 --> 00:04:50,990

FOR THEIR SUPPORT

175

00:04:50,990 --> 00:04:52,592

FOR THIS EVENT FOR NASA

176
00:04:52,592 --> 00:04:53,893
AND FOR THE STEM EDUCATION

177
00:04:53,893 --> 00:04:55,361
ACROSS OHIO.

178
00:04:55,361 --> 00:04:56,462
I HOPE TODAY'S EVENT

179
00:04:56,462 --> 00:04:57,563
INSPIRES YOU TO PURSUE

180
00:04:57,563 --> 00:04:59,198
CLASSES AND CAREERS IN SCIENCE,

181
00:04:59,198 --> 00:05:01,234
TECHNOLOGY, ENGINEERING

182
00:05:01,234 --> 00:05:02,268
AND MATHEMATICS.

183
00:05:02,268 --> 00:05:03,670
AND PERHAPS ONE DAY,

184
00:05:03,670 --> 00:05:04,637
YOU'LL BE JOINING US

185
00:05:04,637 --> 00:05:07,640
BEHIND THE GATES OF NASA GLENN.

186
00:05:10,710 --> 00:05:11,611
>> GOOD MORNING.

187
00:05:11,611 --> 00:05:13,379
I'M OHIO GOVERNOR MIKE DEWINE.

188
00:05:13,379 --> 00:05:14,814

AND WELCOME TO THIS EXCITING

189

00:05:14,814 --> 00:05:16,115

NASA EVENT

190

00:05:16,115 --> 00:05:18,184

COMING TO US LIVE FROM

191

00:05:18,184 --> 00:05:20,753

THE INTERNATIONAL SPACE STATION.

192

00:05:20,753 --> 00:05:21,954

WE'RE SO HONORED TO HAVE

193

00:05:21,954 --> 00:05:23,723

THESE AMERICAN HEROES,

194

00:05:23,723 --> 00:05:26,893

OUR ASTRONAUTS, WITH US TODAY.

195

00:05:26,893 --> 00:05:28,327

OHIO IS PROUD OF ITS

196

00:05:28,327 --> 00:05:30,563

80-YEAR HISTORY WITH NASA,

197

00:05:30,563 --> 00:05:32,065

WHICH IS LEADING OUR NATION

198

00:05:32,065 --> 00:05:33,633

IN TECHNOLOGY DEVELOPMENT

199

00:05:33,633 --> 00:05:36,536

IN SPACE AND HERE ON EARTH.

200

00:05:36,536 --> 00:05:38,638

NASA'S AERONAUTICS,

201
00:05:38,638 --> 00:05:40,406
TECHNOLOGY, SCIENCE

202
00:05:40,406 --> 00:05:41,574
AND STEM EFFORTS

203
00:05:41,574 --> 00:05:42,308
AT THE NASA GLENN

204
00:05:42,308 --> 00:05:44,177
RESEARCH CENTER IN CLEVELAND

205
00:05:44,177 --> 00:05:45,411
AND THE WORLD CLASS

206
00:05:45,411 --> 00:05:47,580
NEIL A. ARMSTRONG TEST FACILITY

207
00:05:47,580 --> 00:05:49,248
IN SANDUSKY, OHIO,

208
00:05:49,248 --> 00:05:50,850
ARE BOTH NAMED

209
00:05:50,850 --> 00:05:52,118
AFTER AMERICAN LEGENDS

210
00:05:52,118 --> 00:05:54,187
FROM OHIO.

211
00:05:54,187 --> 00:05:54,887
WE HOPE YOU ENJOY

212
00:05:54,887 --> 00:05:56,489
THIS OPPORTUNITY TODAY,

213
00:05:56,489 --> 00:05:58,491

AND WHAT A SPECIAL EVENT.

214

00:05:58,491 --> 00:06:00,093

I HOPE THE CONVERSATION

215

00:06:00,093 --> 00:06:01,627

INSPIRES YOU TO REACH

216

00:06:01,627 --> 00:06:02,662

NEW HEIGHTS,

217

00:06:02,662 --> 00:06:03,429

AND TO WORK FOR

218

00:06:03,429 --> 00:06:05,198

THE BETTERMENT OF MANKIND.

219

00:06:05,198 --> 00:06:06,899

GOD SPEED AS YOU REACH

220

00:06:06,899 --> 00:06:09,168

FOR THE STARS.

221

00:06:11,637 --> 00:06:12,338

>> HEY, THERE.

222

00:06:12,338 --> 00:06:14,273

I'M CLEVELAND MAYOR JUSTIN BIBB.

223

00:06:14,273 --> 00:06:15,341

I'D LIKE TO WELCOME YOU

224

00:06:15,341 --> 00:06:16,843

TO THIS EXCITING NASA

225

00:06:16,843 --> 00:06:18,111

ASTRONAUT EVENT

226

00:06:18,111 --> 00:06:19,746

COMING TO US LIVE FROM

227

00:06:19,746 --> 00:06:20,613

THE INTERNATIONAL SPACE

228

00:06:20,613 --> 00:06:22,215

STATION TODAY.

229

00:06:22,215 --> 00:06:23,883

YOU KNOW, IT'S NOT EVERY DAY

230

00:06:23,883 --> 00:06:24,650

YOU HAVE A CHANCE

231

00:06:24,650 --> 00:06:26,152

TO TALK TO REAL ASTRONAUTS

232

00:06:26,152 --> 00:06:27,587

IN SPACE.

233

00:06:27,587 --> 00:06:29,222

TAKE THIS OPPORTUNITY

234

00:06:29,222 --> 00:06:30,423

TO BE CURIOUS

235

00:06:30,423 --> 00:06:31,791

AND LEARN HOW STEM

236

00:06:31,791 --> 00:06:32,792

CAN BE APPLIED

237

00:06:32,792 --> 00:06:34,727

IN CAREERS WITH NASA.

238

00:06:34,727 --> 00:06:36,462

SCIENCE, TECHNOLOGY,

239

00:06:36,462 --> 00:06:38,998

ENGINEERING, AND MATH, OR STEM,

240

00:06:38,998 --> 00:06:40,600

AS YOU CALL IT IN SCHOOL,

241

00:06:40,600 --> 00:06:41,701

IS AN IMPORTANT PART

242

00:06:41,701 --> 00:06:43,002

OF OUR DAILY LIVES,

243

00:06:43,002 --> 00:06:44,804

AND IN OUR CITIES.

244

00:06:44,804 --> 00:06:46,172

AS MAYOR OF CLEVELAND,

245

00:06:46,172 --> 00:06:48,107

I KNOW HOW IMPORTANT STEM IS

246

00:06:48,107 --> 00:06:49,408

TO OUR SUCCESS.

247

00:06:49,408 --> 00:06:51,377

I'M PROUD TO SAY THAT NASA

248

00:06:51,377 --> 00:06:52,979

HAS BEEN WORKING IN CLEVELAND

249

00:06:52,979 --> 00:06:55,214

FOR OVER 80 YEARS,

250

00:06:55,214 --> 00:06:57,683

GENERATING NEARLY \$2 BILLION

251
00:06:57,683 --> 00:06:59,252
TOWARDS OUR ECONOMY.

252
00:06:59,252 --> 00:07:00,253
THERE ARE OVER

253
00:07:00,253 --> 00:07:02,455
3,000 EMPLOYEES TODAY.

254
00:07:02,455 --> 00:07:04,457
MANY STARTED STUDYING STEM

255
00:07:04,457 --> 00:07:06,492
JUST LIKE YOU.

256
00:07:06,492 --> 00:07:08,094
THE NASA GLENN RESEARCH CENTER

257
00:07:08,094 --> 00:07:09,629
HELPS LEAD OUR NATION

258
00:07:09,629 --> 00:07:11,764
IN SPACE AND ON EARTH,

259
00:07:11,764 --> 00:07:12,899
AND NOW IS YOUR CHANCE

260
00:07:12,899 --> 00:07:13,866
TO ASK QUESTIONS

261
00:07:13,866 --> 00:07:15,134
THAT COULD CHANGE YOUR LIFE

262
00:07:15,134 --> 00:07:16,302
AND MAYBE ONE DAY,

263
00:07:16,302 --> 00:07:19,038

LIFE ON EARTH AS WE KNOW IT.

264

00:07:19,038 --> 00:07:20,106

GODSPEED.

265

00:07:20,106 --> 00:07:21,541

GOD BLESS.

266

00:07:21,541 --> 00:07:22,341

THANK YOU SO MUCH.

267

00:07:24,377 --> 00:07:25,211

>> THANK YOU SO MUCH

268

00:07:25,211 --> 00:07:27,280

TO DR. PEREZ-DAVIS,

269

00:07:27,280 --> 00:07:29,215

GOVERNOR MIKE DEWINE

270

00:07:29,215 --> 00:07:30,183

AND MAYOR BIBB

271

00:07:30,183 --> 00:07:32,185

FOR YOUR LEADERSHIP, SUPPORT,

272

00:07:32,185 --> 00:07:34,320

AND THOSE INSPIRING WORDS.

273

00:07:34,320 --> 00:07:36,689

NOW IT IS THE TIME TO CONNECT

274

00:07:36,689 --> 00:07:38,124

WITH THE ASTRONAUTS ON BOARD

275

00:07:38,124 --> 00:07:40,293

THE INTERNATIONAL SPACE STATION.

276
00:07:40,293 --> 00:07:41,360
STUDENTS FROM OUR

277
00:07:41,360 --> 00:07:42,695
PARTICIPATING SCHOOLS

278
00:07:42,695 --> 00:07:44,096
HAVE SUBMITTED QUESTIONS

279
00:07:44,096 --> 00:07:45,464
THAT WILL BE ANSWERED

280
00:07:45,464 --> 00:07:46,866
LIVE FROM SPACE

281
00:07:46,866 --> 00:07:48,534
BY ASTRONAUTS ON BOARD

282
00:07:48,534 --> 00:07:50,636
THE INTERNATIONAL SPACE STATION.

283
00:07:50,636 --> 00:07:52,171
LET'S GO LIVE TO

284
00:07:52,171 --> 00:07:54,574
JOHNSON SPACE CENTER IN HOUSTON

285
00:07:54,574 --> 00:07:56,342
FOR THE DOWNLINK.

286
00:07:57,476 --> 00:08:13,826
[MUSIC]

287
00:08:16,696 --> 00:08:17,997
>> STATION, THIS IS HOUSTON.

288
00:08:17,997 --> 00:08:22,101

ARE YOU READY FOR THE EVENT?

289

00:08:22,101 --> 00:08:26,505

>> STATION'S READY.

290

00:08:26,505 --> 00:08:27,206

>> HOUSTON ACR,

291

00:08:27,206 --> 00:08:28,708

THIS IS MISSION CONTROL HOUSTON.

292

00:08:28,708 --> 00:08:29,308

PLEASE CALL STATION

293

00:08:29,308 --> 00:08:30,877

FOR A VOICE CHECK.

294

00:08:32,612 --> 00:08:33,145

>> STATION, THIS IS

295

00:08:33,145 --> 00:08:33,980

HOUSTON ACR.

296

00:08:33,980 --> 00:08:37,149

HOW DO YOU HEAR ME?

297

00:08:37,149 --> 00:08:37,817

>> STATION HAS YOU

298

00:08:37,817 --> 00:08:39,886

LOUD AND CLEAR.

299

00:08:39,886 --> 00:08:40,486

>> PLEASE STAND BY

300

00:08:40,486 --> 00:08:43,556

FOR OPENING REMARKS.

301

00:08:43,556 --> 00:08:44,790

>> HI, I'M SHERROD BROWN.

302

00:08:44,790 --> 00:08:45,858

IT'S A PRIVILEGE TO SERVE

303

00:08:45,858 --> 00:08:46,792

THE PEOPLE OF OHIO

304

00:08:46,792 --> 00:08:48,294

IN THE UNITED STATES SENATE.

305

00:08:48,294 --> 00:08:49,295

WELCOME TO THE STUDENTS,

306

00:08:49,295 --> 00:08:49,929

THE EDUCATORS,

307

00:08:49,929 --> 00:08:51,898

AND JUST SIMPLY SPACE LOVERS

308

00:08:51,898 --> 00:08:53,232

TUNING IN FROM OHIO

309

00:08:53,232 --> 00:08:54,267

AND ACROSS THE WORLD

310

00:08:54,267 --> 00:08:56,869

FOR TODAY'S DOWNLINK Q&A.

311

00:08:56,869 --> 00:08:58,104

OHIO'S ALWAYS BEEN A LEADER

312

00:08:58,104 --> 00:09:00,206

IN AEROSPACE AND AVIATION,

313

00:09:00,206 --> 00:09:01,540

FROM THE WRIGHT BROTHERS

314

00:09:01,540 --> 00:09:02,508

TO JOHN GLENN,

315

00:09:02,508 --> 00:09:03,776

FROM OUR AEROSPACE COMPANIES

316

00:09:03,776 --> 00:09:05,044

IN DAYTON

317

00:09:05,044 --> 00:09:06,112

TO THE CUTTING EDGE RESEARCH

318

00:09:06,112 --> 00:09:07,613

AT NASA GLENN.

319

00:09:07,613 --> 00:09:08,714

SCIENTISTS, RESEARCHERS,

320

00:09:08,714 --> 00:09:09,582

ENGINEERS ACROSS

321

00:09:09,582 --> 00:09:10,816

THE WHOLE STATE--

322

00:09:10,816 --> 00:09:12,285

WE ARE AN AEROSPACE STATE--

323

00:09:12,285 --> 00:09:13,753

MAKE THIS WORK POSSIBLE.

324

00:09:13,753 --> 00:09:14,987

THANKS FOR TUNING IN TODAY.

325

00:09:14,987 --> 00:09:16,355

THANK YOU FOR CELEBRATING

326

00:09:16,355 --> 00:09:17,823

OUR NATION'S AMAZING

327

00:09:17,823 --> 00:09:20,126

ADVANCEMENTS IN SPACE.

328

00:09:23,195 --> 00:09:25,731

>> HI, MY NAME IS ALEX WHITE

329

00:09:25,731 --> 00:09:27,967

FROM ADMIRAL KING ELEMENTARY

330

00:09:27,967 --> 00:09:29,068

IN LORAIN, OHIO.

331

00:09:29,068 --> 00:09:30,036

WHEN TRAINING TO--

332

00:09:30,036 --> 00:09:31,037

MY QUESTION IS,

333

00:09:31,037 --> 00:09:32,638

WHEN TRAINING TO GO TO SPACE,

334

00:09:32,638 --> 00:09:33,973

WHAT ACTIVITIES DO YOU

335

00:09:33,973 --> 00:09:34,607

HAVE TO DO

336

00:09:34,607 --> 00:09:39,078

TO PREPARE YOURSELVES?

337

00:09:39,078 --> 00:09:39,845

>> HI, ALEX.

338

00:09:39,845 --> 00:09:40,379

SO WHEN WE'RE TRAINING

339

00:09:40,379 --> 00:09:40,980
TO GO TO SPACE,

340

00:09:40,980 --> 00:09:42,148
WE SPEND ABOUT TWO YEARS,

341

00:09:42,148 --> 00:09:43,115
INITIALLY, IN WHAT'S

342

00:09:43,115 --> 00:09:43,883
CALLED AS-CAN,

343

00:09:43,883 --> 00:09:45,217
OR ASTRONAUT CANDIDATE TRAINING,

344

00:09:45,217 --> 00:09:47,753
WHERE WE DO A SERIES, UH,

345

00:09:47,753 --> 00:09:48,421
OF TRAINING TO GET US READY

346

00:09:48,421 --> 00:09:49,188
FOR, KIND OF,

347

00:09:49,188 --> 00:09:49,822
ANY KIND OF MISSION

348

00:09:49,822 --> 00:09:50,356
AND TO GET READY

349

00:09:50,356 --> 00:09:51,257
FOR THE SPACE STATION,

350

00:09:51,257 --> 00:09:52,224
AND THEN ONCE YOU'RE ASSIGNED,

351
00:09:52,224 --> 00:09:53,192
YOU DO MORE SPECIFIC TRAINING

352
00:09:53,192 --> 00:09:54,627
FOR WHATEVER THAT, UH,

353
00:09:54,627 --> 00:09:56,128
EXPEDITION OR MISSION WILL BE,

354
00:09:56,128 --> 00:09:57,229
SO TOM AND I CAME UP HERE

355
00:09:57,229 --> 00:09:58,864
ON THE CREW 3 MISSION

356
00:09:58,864 --> 00:10:00,833
AND ARE ON EXPEDITION 66,

357
00:10:00,833 --> 00:10:01,567
SO, A LOT OF OUR TRAINING

358
00:10:01,567 --> 00:10:02,168
WAS SPECIFIC

359
00:10:02,168 --> 00:10:03,336
TO THE SCIENCE ON BOARD.

360
00:10:03,336 --> 00:10:04,136
IN TERMS OF TRAINING,

361
00:10:04,136 --> 00:10:04,704
THEY'RE GONNA ASK YOU,

362
00:10:04,704 --> 00:10:06,105
AND THERE'S FIVE MAJOR PARTS.

363
00:10:06,105 --> 00:10:07,506

THERE'S ROBOTICS TRAINING.

364

00:10:07,506 --> 00:10:08,841

WE LEARN RUSSIAN BECAUSE, UH,

365

00:10:08,841 --> 00:10:09,809

PART OF THE SPACE STATION

366

00:10:09,809 --> 00:10:10,409

IS RUSSIAN.

367

00:10:10,409 --> 00:10:11,010

SO, TO BE ABLE TO

368

00:10:11,010 --> 00:10:11,711

WORK WITH THEM,

369

00:10:11,711 --> 00:10:13,546

WE LEARN HOW TO SPEAK RUSSIAN.

370

00:10:13,546 --> 00:10:14,714

WE ALSO DO TRAINING

371

00:10:14,714 --> 00:10:16,482

IN SPACEWALKS, OR EVAS.

372

00:10:16,482 --> 00:10:17,717

UH, WE DO A LOT OF TRAINING ON

373

00:10:17,717 --> 00:10:18,751

THE INTERNATIONAL SPACE STATION

374

00:10:18,751 --> 00:10:19,719

SYSTEMS TO LEARN

375

00:10:19,719 --> 00:10:20,386

HOW TO FIX IT

376

00:10:20,386 --> 00:10:21,287

AND OPERATE IT,

377

00:10:21,287 --> 00:10:22,421

AND THEN WE ALSO DO TRAINING

378

00:10:22,421 --> 00:10:23,289

ON THE T-38

379

00:10:23,289 --> 00:10:24,290

WHICH IS AN AIRPLANE,

380

00:10:24,290 --> 00:10:25,358

UH, THAT WE USE TO WORK ON

381

00:10:25,358 --> 00:10:26,058

WHAT WE CALL

382

00:10:26,058 --> 00:10:27,360

SPACE RESOURCE MANAGEMENT

383

00:10:27,360 --> 00:10:28,761

WHERE WE WORK AS CREWS

384

00:10:28,761 --> 00:10:30,096

IN THE AIRPLANE AS VERY SIMILAR

385

00:10:30,096 --> 00:10:32,832

HOW WE WORK AS CREWS IN SPACE.

386

00:10:36,402 --> 00:10:37,737

>> HI, MY NAME IS IMANI,

387

00:10:37,737 --> 00:10:38,337

AND I AM FROM

388

00:10:38,337 --> 00:10:39,705

THE CLEVELAND SCHOOL OF SCIENCE

389

00:10:39,705 --> 00:10:41,073
AND MEDICINE IN OHIO,

390

00:10:41,073 --> 00:10:42,842
AND MY QUESTION IS--

391

00:10:42,842 --> 00:10:44,243
IS THAT IF YOU HAD TO LIVE

392

00:10:44,243 --> 00:10:45,244
ON THE SPACE STATION

393

00:10:45,244 --> 00:10:46,879
FOR THE REST OF YOUR LIFE,

394

00:10:46,879 --> 00:10:47,747
WHAT THREE ITEMS

395

00:10:47,747 --> 00:10:49,982
WOULD YOU TAKE WITH YOU?

396

00:10:52,685 --> 00:10:53,519
>> HI IMANI.

397

00:10:53,519 --> 00:10:54,720
BOY, THAT'S A TOUGH QUESTION

398

00:10:54,720 --> 00:10:56,188
TO ANSWER.

399

00:10:56,188 --> 00:10:57,256
HOWEVER, I ASSUME YOU MEAN

400

00:10:57,256 --> 00:10:58,290
I CAN'T BRING MY FAMILY.

401
00:10:58,290 --> 00:10:59,358
NOW, THEY MIGHT NOT WANT TO

402
00:10:59,358 --> 00:11:00,226
COME LIVE WITH ME

403
00:11:00,226 --> 00:11:01,193
FOR THE REST OF OUR LIVES

404
00:11:01,193 --> 00:11:02,328
ON THE SPACE STATION,

405
00:11:02,328 --> 00:11:02,995
BUT IF I COULDN'T

406
00:11:02,995 --> 00:11:04,263
BRING MY FAMILY,

407
00:11:04,263 --> 00:11:05,564
I WOULD PROBABLY BRING,

408
00:11:05,564 --> 00:11:06,232
YOU KNOW, WE HAVE

409
00:11:06,232 --> 00:11:07,400
SO MUCH STUFF FOR, UH,

410
00:11:07,400 --> 00:11:08,367
UH, AS WONDERFUL HERE

411
00:11:08,367 --> 00:11:09,101
WITH SCIENCE,

412
00:11:09,101 --> 00:11:10,302
I WOULD BRING THINGS LIKE,

413
00:11:10,302 --> 00:11:12,304

PROBABLY A PAINT SET.

414

00:11:12,304 --> 00:11:13,506
I WOULD BRING A LIBRARY,

415

00:11:13,506 --> 00:11:15,041
WHETHER THAT'S A KINDLE WITH,

416

00:11:15,041 --> 00:11:16,442
UH, ALL THE GREATEST,

417

00:11:16,442 --> 00:11:17,143
UH, LITERATURE

418

00:11:17,143 --> 00:11:17,977
THAT I COULD FIND.

419

00:11:17,977 --> 00:11:19,578
I'D HAVE A LOT OF TIME TO READ.

420

00:11:19,578 --> 00:11:20,312
THAT'D BE GOOD,

421

00:11:20,312 --> 00:11:21,047
AND I'LL PROBABLY BRING

422

00:11:21,047 --> 00:11:22,381
A MUSICAL INSTRUMENT

423

00:11:22,381 --> 00:11:23,649
TO LET MY CREATIVE SIDE GROW.

424

00:11:23,649 --> 00:11:26,719
SO, THAT WOULD PROBABLY BE IT.

425

00:11:26,986 --> 00:11:29,622
>> HI, MY NAME IS JAMYA.

426

00:11:29,622 --> 00:11:30,956

HERE IS MY QUESTION.

427

00:11:30,956 --> 00:11:31,824

MY TEAM HAS BEEN

428

00:11:31,824 --> 00:11:33,225

REALLY INTERESTED IN

429

00:11:33,225 --> 00:11:35,094

HOW FLUID BEHAVES IN SPACE.

430

00:11:35,094 --> 00:11:36,362

CAN YOU DEMONSTRATE

431

00:11:36,362 --> 00:11:38,130

HOW WATER BEHAVES IN ORBIT

432

00:11:38,130 --> 00:11:41,267

AND EXPLAIN WHY?

433

00:11:42,334 --> 00:11:43,169

>> YEAH SURE, JAMYA.

434

00:11:43,169 --> 00:11:44,036

SO, ONE OF THE REALLY

435

00:11:44,036 --> 00:11:45,271

COOL THINGS ABOUT WATER,

436

00:11:45,271 --> 00:11:47,106

UH, IN-IN FORCES IN GENERAL--

437

00:11:47,106 --> 00:11:48,574

SO ON EARTH, UH,

438

00:11:48,574 --> 00:11:49,475

THERE'S ALWAYS DIFFERENT FORCES

439

00:11:49,475 --> 00:11:50,376
ACTING ON THINGS,

440

00:11:50,376 --> 00:11:51,343
AND GRAVITY

441

00:11:51,343 --> 00:11:52,978
OFTEN PLAYS A DOMINANT ONE.

442

00:11:52,978 --> 00:11:53,779
HERE IN SPACE,

443

00:11:53,779 --> 00:11:54,880
THERE'S MICROGRAVITY,

444

00:11:54,880 --> 00:11:55,848
AND SO YOU CAN SEE HERE

445

00:11:55,848 --> 00:11:56,782
THE DOMINANT FORCE

446

00:11:56,782 --> 00:11:57,817
IS SURFACE TENSION.

447

00:11:57,817 --> 00:11:58,684
SO, IT TURNS OUT

448

00:11:58,684 --> 00:11:59,318
WATER MOLECULES

449

00:11:59,318 --> 00:12:00,286
REALLY LIKE TO STICK TOGETHER,

450

00:12:00,286 --> 00:12:01,387
UH, AND SO INSTEAD

451
00:12:01,387 --> 00:12:02,221
OF FALLING OR DISPERSING

452
00:12:02,221 --> 00:12:03,889
LIKE THEY DO ON EARTH,

453
00:12:03,889 --> 00:12:05,091
THEY STICK TO THINGS.

454
00:12:05,091 --> 00:12:08,394
SO, WHETHER THAT'S MY HAND

455
00:12:08,394 --> 00:12:10,229
OR WHETHER THAT'S THE STRAW,

456
00:12:10,229 --> 00:12:11,897
UH, IT'S BOTH FUN

457
00:12:11,897 --> 00:12:12,698
AND INTERESTING,

458
00:12:12,698 --> 00:12:13,766
AND THE RE-REASON

459
00:12:13,766 --> 00:12:14,500
IT'S INTERESTING

460
00:12:14,500 --> 00:12:15,267
IS NOT ONLY DOES WATER

461
00:12:15,267 --> 00:12:16,001
BEHAVE DIFFERENTLY IN SPACE,

462
00:12:16,001 --> 00:12:16,635
BUT A WHOLE LOT

463
00:12:16,635 --> 00:12:17,403

OF DIFFERENT MATERIALS

464

00:12:17,403 --> 00:12:18,304

AND MOLECULES

465

00:12:18,304 --> 00:12:19,738

BEHAVE DIFFERENTLY IN SPACE

466

00:12:19,738 --> 00:12:20,639

WHEN THE FORCES

467

00:12:20,639 --> 00:12:22,708

THAT GOVERN THEM AREN'T ALWAYS

468

00:12:22,708 --> 00:12:24,110

DOMINATED BY GRAVITY,

469

00:12:24,110 --> 00:12:24,910

AND SO THAT HELPS US

470

00:12:24,910 --> 00:12:25,911

DISCOVER NEW MATERIALS

471

00:12:25,911 --> 00:12:26,545

AND NEW WAYS

472

00:12:26,545 --> 00:12:27,913

OF MAKING MATERIALS,

473

00:12:27,913 --> 00:12:29,615

UM, AND SO WATER OFTEN TIMES

474

00:12:29,615 --> 00:12:30,983

IS A REALLY GOOD ANALOG FOR US

475

00:12:30,983 --> 00:12:32,351

TO LOOK AT TO UNDERSTAND

476

00:12:32,351 --> 00:12:33,586

WHAT THE VERY SIMPLE

477

00:12:33,586 --> 00:12:34,920

NON-TOXIC SUBSTANCE

478

00:12:34,920 --> 00:12:35,788

BEFORE WE DO

479

00:12:35,788 --> 00:12:37,123

MORE COMPLICATED EXPERIMENTS

480

00:12:37,123 --> 00:12:37,857

WITH THINGS THAT ARE

481

00:12:37,857 --> 00:12:39,091

MAYBE A LITTLE MORE, UH,

482

00:12:39,091 --> 00:12:40,459

DANGEROUS OR-OR HAVE TO BE

483

00:12:40,459 --> 00:12:41,861

CONTAINED A LITTLE BIT MORE,

484

00:12:41,861 --> 00:12:44,263

UH, CAREFULLY.

485

00:12:45,197 --> 00:12:46,966

>> HELLO, MY NAME IS FERNANDA,

486

00:12:46,966 --> 00:12:47,900

AND I'M FROM MY SCHOOL

487

00:12:47,900 --> 00:12:49,268

IN AKRON, OHIO.

488

00:12:49,268 --> 00:12:50,469

HOW DO YOU ANALYZE DATA

489

00:12:50,469 --> 00:12:53,639
FROM THE SPACE STATION?

490

00:12:56,075 --> 00:12:56,809
>> WELL, THERE'S CERTAINLY IS

491

00:12:56,809 --> 00:12:57,710
A LOT OF DATA COMING FROM

492

00:12:57,710 --> 00:12:58,544
THE SPACE STATION,

493

00:12:58,544 --> 00:12:59,478
BOTH ON THE HEALTH

494

00:12:59,478 --> 00:13:00,513
OF THE SPACE STATION

495

00:13:00,513 --> 00:13:01,614
AND ALL THE SCIENTIFIC DATA

496

00:13:01,614 --> 00:13:02,781
THAT WE'RE PUTTING DOWN.

497

00:13:02,781 --> 00:13:03,849
SO, THE WAY WE DO IT

498

00:13:03,849 --> 00:13:04,917
IS WE HAVE BIG ANTENNAS

499

00:13:04,917 --> 00:13:05,718
ON THE SPACE STATION

500

00:13:05,718 --> 00:13:06,919
AND WE DOWNLINK.

501
00:13:06,919 --> 00:13:07,720
SO, WE HAVE TO HAVE GOOD--

502
00:13:07,720 --> 00:13:08,821
GOOD COMMUNICATION.

503
00:13:08,821 --> 00:13:09,688
UH, WE PROBABLY

504
00:13:09,688 --> 00:13:10,623
BOUNCE IT OFF A SATELLITE

505
00:13:10,623 --> 00:13:11,357
AND GET IT DOWN TO

506
00:13:11,357 --> 00:13:12,224
ALL THE MISSION CONTROLS

507
00:13:12,224 --> 00:13:13,092
AROUND THE WORLD,

508
00:13:13,092 --> 00:13:14,059
AND ALL OF THE, UH,

509
00:13:14,059 --> 00:13:15,494
SCIENTISTS AROUND THE WORLD,

510
00:13:15,494 --> 00:13:16,362
AND SO THEY COLLECT

511
00:13:16,362 --> 00:13:17,863
THAT DATA AND IT'S--

512
00:13:17,863 --> 00:13:19,398
IT'S REALLY NICE TO HAVE--

513
00:13:19,398 --> 00:13:20,266

TO KNOW THAT MISSION CONTROL

514

00:13:20,266 --> 00:13:20,900
IS DOWN THERE

515

00:13:20,900 --> 00:13:22,101
WATCHING THE HEALTH AND STATUS

516

00:13:22,101 --> 00:13:23,369
OF THE SPACE STATION,

517

00:13:23,369 --> 00:13:24,170
'CAUSE THEY'RE WATCHING US

518

00:13:24,170 --> 00:13:25,504
EVERY MINUTE OF EVERY DAY,

519

00:13:25,504 --> 00:13:26,639
24 HOURS A DAY, UH,

520

00:13:26,639 --> 00:13:28,974
365 DAYS A YEAR

521

00:13:28,974 --> 00:13:30,009
TO MAKE SURE THAT

522

00:13:30,009 --> 00:13:31,076
THE SPACE STATION IS HEALTHY.

523

00:13:31,076 --> 00:13:32,011
THEY'RE KEEPING US ALIVE

524

00:13:32,011 --> 00:13:34,346
AND KEEPING THE MISSION GOING.

525

00:13:35,581 --> 00:13:36,582
>> HI, MY NAME IS MIA.

526

00:13:36,582 --> 00:13:37,483

I'M FROM PARMA COMMUNITY

527

00:13:37,483 --> 00:13:38,918

MIDDLE IN PARMA, OHIO.

528

00:13:38,918 --> 00:13:40,019

MY QUESTION IS, WHAT IS

529

00:13:40,019 --> 00:13:40,953

THE MOST INTERESTING EXPERIENCE

530

00:13:40,953 --> 00:13:42,188

YOU'VE HAD IN SPACE?

531

00:13:42,188 --> 00:13:44,590

THANK YOU.

532

00:13:46,058 --> 00:13:46,625

>> HI MIA.

533

00:13:46,625 --> 00:13:47,293

I THINK FOR ME

534

00:13:47,293 --> 00:13:48,227

THE MOST INTERESTING THING WAS,

535

00:13:48,227 --> 00:13:49,428

UH, HELPING TOM AND KAYLA

536

00:13:49,428 --> 00:13:50,996

GO DO A SPACEWALK,

537

00:13:50,996 --> 00:13:52,765

AND SO, UH, EARLIER, UH,

538

00:13:52,765 --> 00:13:53,666

THEY WENT OUT TO FIX

539

00:13:53,666 --> 00:13:54,833

WHAT'S CALLED AN S-BAND ANTENNA,

540

00:13:54,833 --> 00:13:55,668

WHICH IS ONE OF THE ANTENNAS

541

00:13:55,668 --> 00:13:56,802

AS TOM MENTIONED

542

00:13:56,802 --> 00:13:57,970

THAT WE USED TO TRANSMIT DATA

543

00:13:57,970 --> 00:13:59,438

BACK FORTH THE GROUND,

544

00:13:59,438 --> 00:14:00,272

AND SO THEY WENT OUT

545

00:14:00,272 --> 00:14:01,140

TO REPLACE THAT ANTENNA.

546

00:14:01,140 --> 00:14:02,274

AS PART OF THAT, UH,

547

00:14:02,274 --> 00:14:04,109

MATTHIAS AND I AND MARK--

548

00:14:04,109 --> 00:14:04,977

THE OTHER THREE, UH,

549

00:14:04,977 --> 00:14:06,111

CREW MEMBERS UP HERE

550

00:14:06,111 --> 00:14:07,079

ON THE U.S. SEGMENT

551
00:14:07,079 --> 00:14:08,113
HAD TO SUIT THEM UP

552
00:14:08,113 --> 00:14:08,847
AND THEN SEND THEM

553
00:14:08,847 --> 00:14:09,615
OUT THE AIRLOCK,

554
00:14:09,615 --> 00:14:10,249
WHICH IS PRETTY COOL

555
00:14:10,249 --> 00:14:11,050
TO PUT YOUR FRIEND

556
00:14:11,050 --> 00:14:11,817
INTO A SPACE SUIT

557
00:14:11,817 --> 00:14:12,718
THEN SEND HIM OUTSIDE

558
00:14:12,718 --> 00:14:13,619
INTO SPACE.

559
00:14:13,619 --> 00:14:14,553
AND ONCE THEY'RE OUT THERE,

560
00:14:14,553 --> 00:14:15,187
WHAT WAS EVEN BETTER

561
00:14:15,187 --> 00:14:15,821
WAS THAT WE GOT TO

562
00:14:15,821 --> 00:14:16,488
MOVE TOM AROUND

563
00:14:16,488 --> 00:14:17,556

ON THE ROBOTIC ARM,

564

00:14:17,556 --> 00:14:18,257

AND SO WE PRACTICED

565

00:14:18,257 --> 00:14:19,124

AND TRAINED A LOT FOR THAT

566

00:14:19,124 --> 00:14:19,758

ON THE GROUND,

567

00:14:19,758 --> 00:14:20,659

BUT ACTUALLY HAVING YOUR FRIEND

568

00:14:20,659 --> 00:14:21,594

BE OUT THERE

569

00:14:21,594 --> 00:14:22,328

ON THE END OF AN ARM,

570

00:14:22,328 --> 00:14:23,295

YOU'RE MOVING, UH,

571

00:14:23,295 --> 00:14:24,296

IN SPACE WAS

572

00:14:24,296 --> 00:14:26,465

A PRETTY AMAZING EXPERIENCE.

573

00:14:27,666 --> 00:14:28,367

>> HEY,

574

00:14:28,367 --> 00:14:29,201

I'M SEBASTIAN [INDISTINCT]

575

00:14:29,201 --> 00:14:32,171

FROM HORIZON DENISON

576
00:14:32,171 --> 00:14:33,105
SCIENCE ACADEMY

577
00:14:33,105 --> 00:14:34,206
IN CLEVELAND, OHIO,

578
00:14:34,206 --> 00:14:35,674
AND I WANT TO ASK

579
00:14:35,674 --> 00:14:37,276
HOW DO YOU GET FRESH WATER

580
00:14:37,276 --> 00:14:38,677
TO DRINK IN OUTER SPACE

581
00:14:38,677 --> 00:14:40,212
AND HOW DO YOU SPECIFICALLY

582
00:14:40,212 --> 00:14:42,848
STAY CLEAN?

583
00:14:45,684 --> 00:14:46,518
>> HEY SEBASTIAN.

584
00:14:46,518 --> 00:14:47,286
WELL, I'LL TELL YOU.

585
00:14:47,286 --> 00:14:49,455
WE, UH, CAN FLY WATER

586
00:14:49,455 --> 00:14:50,756
UP TO THE SPACE STATION,

587
00:14:50,756 --> 00:14:51,423
BUT WATER IS ACTUALLY

588
00:14:51,423 --> 00:14:52,191

PRETTY HEAVY.

589

00:14:52,191 --> 00:14:52,925

WE WANT TO RECLAIM

590

00:14:52,925 --> 00:14:53,826

AS MUCH AS WE CAN

591

00:14:53,826 --> 00:14:56,195

SO WE CAN USE ALL THAT, UM,

592

00:14:56,195 --> 00:14:56,929

ALL THAT SPACE

593

00:14:56,929 --> 00:14:57,730

ON THE SPACE SHIPS

594

00:14:57,730 --> 00:14:58,330

THAT COME TO US

595

00:14:58,330 --> 00:14:59,398

FOR SCIENTIFIC EQUIPMENT

596

00:14:59,398 --> 00:15:00,366

AND FOOD AND-AND

597

00:15:00,366 --> 00:15:01,100

THOSE KINDS OF THINGS.

598

00:15:01,100 --> 00:15:02,635

SO, WE RECLAIM THE WATER

599

00:15:02,635 --> 00:15:04,303

THAT COMES OUT OF OUR BODIES

600

00:15:04,303 --> 00:15:05,938

AND IT MAY COME OUT AS SWEAT

601
00:15:05,938 --> 00:15:06,805
AND MAYBE THE WATER

602
00:15:06,805 --> 00:15:07,940
THAT COMES OUT

603
00:15:07,940 --> 00:15:08,974
WHEN WE GO TO THE BATHROOM.

604
00:15:08,974 --> 00:15:09,541
WE HAVE

605
00:15:09,541 --> 00:15:10,643
THESE WONDERFUL PURIFIERS

606
00:15:10,643 --> 00:15:11,777
THAT CLEAN THAT WATER.

607
00:15:11,777 --> 00:15:13,345
WE CAN GET ABOUT 93%

608
00:15:13,345 --> 00:15:15,481
OF THE WATER RECLAIMED,

609
00:15:15,481 --> 00:15:16,282
WHICH IS A--

610
00:15:16,282 --> 00:15:17,049
ACTUALLY A WONDERFUL THING

611
00:15:17,049 --> 00:15:17,850
AND ESSENTIAL

612
00:15:17,850 --> 00:15:19,385
BEFORE WE GO TO MARS,

613
00:15:19,385 --> 00:15:20,052

BECAUSE WE'RE GOING TO NEED

614

00:15:20,052 --> 00:15:22,154
ABOUT 98-8%, UH,

615

00:15:22,154 --> 00:15:23,489
RECLAMATION RATE

616

00:15:23,489 --> 00:15:24,490
IN ORDER TO BE ABLE TO

617

00:15:24,490 --> 00:15:25,257
GO TO MARS

618

00:15:25,257 --> 00:15:26,025
SO WE DON'T HAVE TO CARRY

619

00:15:26,025 --> 00:15:27,593
TOO MUCH WATER WITH US.

620

00:15:27,593 --> 00:15:29,428
UH, THE WAY WE STAY CLEAN

621

00:15:29,428 --> 00:15:30,896
IS WE USE WET WIPES.

622

00:15:30,896 --> 00:15:31,964
WE DON'T HAVE, UH,

623

00:15:31,964 --> 00:15:32,831
RUNNING WATER UP HERE.

624

00:15:32,831 --> 00:15:34,133
WE CAN'T TAKE SHOWERS OR BATHS

625

00:15:34,133 --> 00:15:35,367
LIKE YOU MIGHT THINK,

626
00:15:35,367 --> 00:15:36,502
BUT IT'S ACTUALLY PRETTY NICE.

627
00:15:36,502 --> 00:15:39,138
WE HAVE JUST, UH, GAUZE TOWELS,

628
00:15:39,138 --> 00:15:40,072
OR THICK TOWELS

629
00:15:40,072 --> 00:15:41,440
THAT WE WET AND

630
00:15:41,440 --> 00:15:43,175
RUB ALL OVER OURSELVES WITH, UH,

631
00:15:43,175 --> 00:15:43,909
A LITTLE BIT OF SOAP

632
00:15:43,909 --> 00:15:44,977
AND THEN DO IT AGAIN

633
00:15:44,977 --> 00:15:47,079
TO GET THE SOAP OFF, AND, UH,

634
00:15:47,079 --> 00:15:49,815
THAT'S HOW WE STAY CLEAN.

635
00:15:50,649 --> 00:15:52,217
>> MY NAME IS JAI'KIEST CAMERON.

636
00:15:52,217 --> 00:15:53,252
I'M FROM GINN ACADEMY

637
00:15:53,252 --> 00:15:54,787
IN CLEVELAND, OHIO.

638
00:15:54,787 --> 00:15:56,789

MY QUESTION IS, AS AN ASTRONAUT,

639

00:15:56,789 --> 00:15:57,723

WHAT IS YOUR FAVORITE THING

640

00:15:57,723 --> 00:16:00,559

TO DO IN YOUR FREE TIME?

641

00:16:02,194 --> 00:16:03,128

>> WELL, ONE OF THE THINGS

642

00:16:03,128 --> 00:16:04,063

IS JUST GETTING AROUND,

643

00:16:04,063 --> 00:16:05,497

AND SO, UH,

644

00:16:05,497 --> 00:16:06,799

TO BE ABLE TO JUST FLOAT

645

00:16:06,799 --> 00:16:07,966

AND MOVE AROUND, UH,

646

00:16:07,966 --> 00:16:09,068

WITH JUST FINGER TIPS

647

00:16:09,068 --> 00:16:10,469

AND SLIGHT PUSHES

648

00:16:10,469 --> 00:16:11,437

AND FLY THROUGH MODULES

649

00:16:11,437 --> 00:16:12,571

KIND OF LIKE, UH,

650

00:16:12,571 --> 00:16:13,605

FEELING LIKE SUPERMAN.

651
00:16:13,605 --> 00:16:14,406
SHOOTING THROUGH THINGS

652
00:16:14,406 --> 00:16:15,374
IS PRETTY FUN,

653
00:16:15,374 --> 00:16:16,508
AND THAT'S JUST GETTING AROUND

654
00:16:16,508 --> 00:16:18,344
FROM TASK TO TASK,

655
00:16:18,344 --> 00:16:19,445
AND MY OTHER FAVORITE THING

656
00:16:19,445 --> 00:16:20,379
TO DO IN MY FREE TIME

657
00:16:20,379 --> 00:16:21,380
IS TO GO LOOK OUT THE WINDOW.

658
00:16:21,380 --> 00:16:22,114
SO, WE HAVE WHAT'S CALLED

659
00:16:22,114 --> 00:16:22,915
A CUPOLA, UH,

660
00:16:22,915 --> 00:16:24,116
WHICH IS BOTH A WINDOW

661
00:16:24,116 --> 00:16:25,117
THAT WE USE FOR WHEN

662
00:16:25,117 --> 00:16:26,185
WE'RE RUNNING THE ROBOTIC ARM,

663
00:16:26,185 --> 00:16:26,885

BUT ALSO GIVES US

664

00:16:26,885 --> 00:16:27,653

A GREAT OPPORTUNITY

665

00:16:27,653 --> 00:16:29,054

TO LOOK OUTSIDE, UM,

666

00:16:29,054 --> 00:16:29,988

AND SEE THE EARTH BELOW US

667

00:16:29,988 --> 00:16:31,423

AND SEE THE CITY LIGHTS

668

00:16:31,423 --> 00:16:32,424

AT NIGHT, UH,

669

00:16:32,424 --> 00:16:33,459

SEE THE OCEANS AND

670

00:16:33,459 --> 00:16:34,793

SEE THE-THE CITIES AND

671

00:16:34,793 --> 00:16:35,894

COUNTRIES DURING THE DAY.

672

00:16:35,894 --> 00:16:37,296

SO, IT'S A PRETTY AMAZING VIEW,

673

00:16:37,296 --> 00:16:38,397

UH, AND THAT'S DEFINITELY

674

00:16:38,397 --> 00:16:39,264

MY FAVORITE THING TO DO

675

00:16:39,264 --> 00:16:43,068

WHEN I'VE GOT FREE TIME.

676

00:16:43,068 --> 00:16:44,203

>> I LIKE TO DANCE.

677

00:16:44,203 --> 00:16:46,105

CAN YOU DANCE ON THE ISS

678

00:16:46,105 --> 00:16:48,941

IN SPACE?

679

00:16:53,712 --> 00:16:54,847

>> HI TRACY.

680

00:16:54,847 --> 00:16:56,382

I THINK IT WOULD BE FUN TO, UH,

681

00:16:56,382 --> 00:16:58,684

HAVE, UH, MORE DANCING UP HERE.

682

00:16:58,684 --> 00:17:00,185

WE DO A LITTLE BIT OF IT.

683

00:17:00,185 --> 00:17:01,620

YEAH, WE DO PLAY MUSIC UP HERE.

684

00:17:01,620 --> 00:17:03,622

SO, I, UH,

685

00:17:03,622 --> 00:17:04,623

WE'LL DEMONSTRATE SOMETHING

686

00:17:04,623 --> 00:17:05,958

THAT'S NOT EXACTLY A DANCE,

687

00:17:05,958 --> 00:17:07,259

BUT IT KIND OF LOOKS LIKE IT,

688

00:17:07,259 --> 00:17:08,293

AND THIS IS A WAY THAT

689

00:17:08,293 --> 00:17:09,328

YOU CAN DEMONSTRATE

690

00:17:09,328 --> 00:17:10,295

ANGULAR MOMENTUM

691

00:17:10,295 --> 00:17:11,430

IS THE WAY A CAT TURNS.

692

00:17:11,430 --> 00:17:12,431

IF YOU'RE WONDERING HOW A CAT

693

00:17:12,431 --> 00:17:13,632

CAN ALWAYS LAND ON ITS FEET,

694

00:17:13,632 --> 00:17:15,167

THIS IS HOW IT DOES IT.

695

00:17:15,167 --> 00:17:16,869

EXCUSE ME.

696

00:17:23,041 --> 00:17:24,943

HOW'S THAT?

697

00:17:24,943 --> 00:17:25,711

>> SO THAT'S SOME--

698

00:17:25,711 --> 00:17:26,345

THAT'S SOME SERIOUS

699

00:17:26,345 --> 00:17:27,746

HIP SHAKING GOING ON.

700

00:17:27,746 --> 00:17:29,515

>> [INDISTINCT].

701

00:17:31,517 --> 00:17:33,485

>> HI, MY NAME IS ALI.

702

00:17:33,485 --> 00:17:34,520

WE HEARD MOST OF THE FOOD

703

00:17:34,520 --> 00:17:36,021

YOU EAT IS DEHYDRATED

704

00:17:36,021 --> 00:17:36,822

TO SAVE SPACE

705

00:17:36,822 --> 00:17:38,357

AND REDUCE LAUNCH WEIGHT.

706

00:17:38,357 --> 00:17:40,225

HERE'S MY QUESTION.

707

00:17:40,225 --> 00:17:41,026

DO YOU-- HOW DO YOU

708

00:17:41,026 --> 00:17:42,027

PREPARE FOOD IN SPACE,

709

00:17:42,027 --> 00:17:46,498

AND DO YOU HAVE A FAVORITE?

710

00:17:46,498 --> 00:17:47,566

>> SO ALI, WE HAVE, UH,

711

00:17:47,566 --> 00:17:49,168

A FEW DIFFERENT WAYS TO PREPARE

712

00:17:49,168 --> 00:17:50,669

AND STORE FOOD UP HERE.

713

00:17:50,669 --> 00:17:52,004

UH, SO WE HAVE BOTH, UH,

714

00:17:52,004 --> 00:17:53,605
FREEZERS AND HEATERS.

715

00:17:53,605 --> 00:17:54,506
UH, WE USE THE FREEZERS

716

00:17:54,506 --> 00:17:55,474
MOSTLY FOR SCIENCE,

717

00:17:55,474 --> 00:17:56,408
BUT WE CAN ALSO USE THEM

718

00:17:56,408 --> 00:17:57,242
FOR FOOD.

719

00:17:57,242 --> 00:17:58,343
SO, WE GOT A SPECIAL DELIVERY

720

00:17:58,343 --> 00:17:59,645
OF SOME POPSICLES WITH, UH,

721

00:17:59,645 --> 00:18:01,246
OUR LAST CYGNUS CARGO VEHICLE.

722

00:18:01,246 --> 00:18:02,781
ONCE THE FOOD'S UP HERE, UH,

723

00:18:02,781 --> 00:18:03,715
THEN WE PREPARE IT

724

00:18:03,715 --> 00:18:04,817
A FEW DIFFERENT WAYS.

725

00:18:04,817 --> 00:18:06,285
SO, WE HAVE KIND OF

726
00:18:06,285 --> 00:18:09,555
A TRADITIONAL DEHYDRATED FOOD,

727
00:18:09,555 --> 00:18:10,756
AND SO THAT'S, UH,

728
00:18:10,756 --> 00:18:12,124
CASHEW CHICKEN CURRY

729
00:18:12,124 --> 00:18:13,125
BUT WITHOUT ANY WATER IN IT,

730
00:18:13,125 --> 00:18:14,293
AND SO BASICALLY YOU--

731
00:18:14,293 --> 00:18:14,960
WE HOOK IT UP TO

732
00:18:14,960 --> 00:18:15,928
A WATER DISPENSER.

733
00:18:15,928 --> 00:18:17,429
WE ADD THE WATER BACK IN, UH,

734
00:18:17,429 --> 00:18:18,764
AND THEN AFTER ABOUT FIVE

735
00:18:18,764 --> 00:18:19,431
OR TEN MINUTES

736
00:18:19,431 --> 00:18:20,432
OF LETTING THE WATER SOAK IN

737
00:18:20,432 --> 00:18:21,366
AND KEEPING IT IN THE HEATER

738
00:18:21,366 --> 00:18:22,501

THEN IT'S READY TO EAT.

739

00:18:22,501 --> 00:18:23,602

THE OTHER TYPE OF FOOD WE HAVE

740

00:18:23,602 --> 00:18:24,837

IS-IS PREPACKAGED.

741

00:18:24,837 --> 00:18:26,872

SO, IT'S NOT DEHYDRATED. UM,

742

00:18:26,872 --> 00:18:27,539

THOSE ARE

743

00:18:27,539 --> 00:18:28,574

CANDY COATED CHOCOLATES,

744

00:18:28,574 --> 00:18:29,608

AND SO BASICALLY

745

00:18:29,608 --> 00:18:30,242

THOSE ARE JUST LIKE

746

00:18:30,242 --> 00:18:31,176

YOU WOULD HAVE ON EARTH.

747

00:18:31,176 --> 00:18:31,944

SO, THERE'S SOME FOODS

748

00:18:31,944 --> 00:18:34,646

THAT IF IT'S NOT PERISHABLE, UH,

749

00:18:34,646 --> 00:18:35,314

NOT STUFF THAT WILL GO BAD,

750

00:18:35,314 --> 00:18:36,081

YOU CAN JUST FLY IT UP, UH,

751

00:18:36,081 --> 00:18:36,615

PACKAGED AND

752

00:18:36,615 --> 00:18:37,749

WE'RE ABLE TO EAT IT HERE.

753

00:18:37,749 --> 00:18:38,617

THIS STAYS IN THE BAG THOUGH,

754

00:18:38,617 --> 00:18:39,351

BECAUSE AS YOU CAN SEE,

755

00:18:39,351 --> 00:18:39,918

IT'D BE PRETTY HARD

756

00:18:39,918 --> 00:18:41,253

TO CONTROL ALL THOSE LITTLE GUYS

757

00:18:41,253 --> 00:18:42,187

ONCE THEY GET OUT THE BAG,

758

00:18:42,187 --> 00:18:42,855

SO YOU GOT TO BE READY

759

00:18:42,855 --> 00:18:44,389

TO EAT THEM WHEN THEY COME OUT.

760

00:18:44,389 --> 00:18:45,524

THE OTHER THING THAT, UH, WE DO

761

00:18:45,524 --> 00:18:46,925

IS ACTUALLY GROW OUR OWN PLANTS,

762

00:18:46,925 --> 00:18:47,926

AND SO, UH,

763

00:18:47,926 --> 00:18:48,827

WHILE WE'VE BEEN UP HERE,

764

00:18:48,827 --> 00:18:49,728

WE GOT TO EAT

765

00:18:49,728 --> 00:18:51,096

SOME HATCH CHILLIES THAT, UH,

766

00:18:51,096 --> 00:18:52,331

THE PREVIOUS EXPEDITION GREW

767

00:18:52,331 --> 00:18:53,131

AND THEN WE STARTED GROWING

768

00:18:53,131 --> 00:18:54,032

SOME LETTUCE,

769

00:18:54,032 --> 00:18:54,566

AND THE REASON

770

00:18:54,566 --> 00:18:55,534

WE'RE DOING THAT IS NOT ONLY

771

00:18:55,534 --> 00:18:56,835

BECAUSE IT'S GREAT AND, UH,

772

00:18:56,835 --> 00:18:58,036

UH, DELICIOUS,

773

00:18:58,036 --> 00:18:58,670

BUT REALLY

774

00:18:58,670 --> 00:18:59,605

WE'RE ALSO RESEARCHING THAT

775

00:18:59,605 --> 00:19:00,639

FOR OUR EVENTUAL

776

00:19:00,639 --> 00:19:01,306

RETURN TO THE MOON

777

00:19:01,306 --> 00:19:02,274

AND TO STAY ON THE MOON

778

00:19:02,274 --> 00:19:03,242

AND GO TO MARS.

779

00:19:03,242 --> 00:19:04,376

WE'LL BE ABLE TO HAVE, UH,

780

00:19:04,376 --> 00:19:05,444

WE NEED TO BE ABLE TO

781

00:19:05,444 --> 00:19:06,345

GROW OUR OWN PLANTS.

782

00:19:06,345 --> 00:19:07,379

WE CAN'T HAUL IT ALL WITH US

783

00:19:07,379 --> 00:19:07,946

JUST LIKE WATER.

784

00:19:07,946 --> 00:19:08,514

IT'S REALLY HEAVY

785

00:19:08,514 --> 00:19:09,915

TO BRING ALL THAT STUFF WITH US.

786

00:19:09,915 --> 00:19:10,816

SO, WE'RE WORKING ON

787

00:19:10,816 --> 00:19:11,483

THE TECHNOLOGIES

788

00:19:11,483 --> 00:19:12,351

AND WE NEED TO BE ABLE TO GROW,

789

00:19:12,351 --> 00:19:14,386

UM, SUSTAINABLE, UH, FOOD

790

00:19:14,386 --> 00:19:15,654

FOR OUR ASTRONAUTS

791

00:19:15,654 --> 00:19:16,588

AND FOR FUTURE HUMANS

792

00:19:16,588 --> 00:19:18,724

ON OTHER PLANETS.

793

00:19:20,359 --> 00:19:21,727

>> MY NAME CAMERON

794

00:19:21,727 --> 00:19:22,761

AND I AM FROM

795

00:19:22,761 --> 00:19:24,696

PARMA COMMUNITY MIDDLE SCHOOL

796

00:19:24,696 --> 00:19:26,965

IN PARMA, OHIO.

797

00:19:26,965 --> 00:19:28,667

MY QUESTION IS, WHAT HAS BEEN

798

00:19:28,667 --> 00:19:30,302

YOUR FAVORITE EXPERIMENT ON

799

00:19:30,302 --> 00:19:32,971

THE INTERNATIONAL SPACE STATION?

800

00:19:36,842 --> 00:19:37,976

>> THAT'S A REALLY HARD QUESTION

801
00:19:37,976 --> 00:19:39,678
TO ANSWER, UM,

802
00:19:39,678 --> 00:19:41,313
THEY'RE ALL EXTREMELY EXCITING

803
00:19:41,313 --> 00:19:42,314
AND, UH, WE'RE VERY HONORED

804
00:19:42,314 --> 00:19:43,348
TO BE A PART OF THEM.

805
00:19:43,348 --> 00:19:44,917
UH, THE MOST RECENT ONE

806
00:19:44,917 --> 00:19:45,617
I'VE WORKED ON,

807
00:19:45,617 --> 00:19:46,151
WHICH I THOUGHT

808
00:19:46,151 --> 00:19:47,185
WAS VERY INTERESTING,

809
00:19:47,185 --> 00:19:48,487
WAS I WAS TAKING SKIN CELLS--

810
00:19:48,487 --> 00:19:49,988
HUMAN SKIN CELLS,

811
00:19:49,988 --> 00:19:50,656
THAT HAVE BEEN GROWN

812
00:19:50,656 --> 00:19:51,890
IN A PETRI DISH,

813
00:19:51,890 --> 00:19:52,791

AND THEY FLEW THEM UP HERE

814

00:19:52,791 --> 00:19:53,725
IN THESE LITTLE PELLETS,

815

00:19:53,725 --> 00:19:54,693
AND THEY'RE LOOKING AT

816

00:19:54,693 --> 00:19:55,561
THE EFFECTS OF

817

00:19:55,561 --> 00:19:56,862
THE RADIATION OF SPACE

818

00:19:56,862 --> 00:19:59,798
AND THE ZERO-G ON SKIN CELLS.

819

00:19:59,798 --> 00:20:00,666
AND IT TURNS OUT

820

00:20:00,666 --> 00:20:01,500
THAT BEING IN SPACE

821

00:20:01,500 --> 00:20:03,068
TENDS TO AGE OUR BODIES FASTER,

822

00:20:03,068 --> 00:20:04,636
MUCH, MUCH FASTER,

823

00:20:04,636 --> 00:20:05,671
IN TERMS OF BONE LOSS,

824

00:20:05,671 --> 00:20:06,872
MUSCLE ATROPHY,

825

00:20:06,872 --> 00:20:08,073
EFFECTS ON THE SKIN.

826

00:20:08,073 --> 00:20:09,207

IT AGES US MUCH FASTER

827

00:20:09,207 --> 00:20:10,042

THAN IT DOES ON THE GROUND,

828

00:20:10,042 --> 00:20:11,243

SO THIS IS AN OPPORTUNITY

829

00:20:11,243 --> 00:20:13,278

TO, UH, TAKE SOME HUMAN--

830

00:20:13,278 --> 00:20:14,313

A HUMAN ORGAN--

831

00:20:14,313 --> 00:20:15,681

SKIN IS THE LARGEST ORGAN

832

00:20:15,681 --> 00:20:17,182

ON THE HUMAN BODY--

833

00:20:17,182 --> 00:20:18,083

AND TO SEE WHAT

834

00:20:18,083 --> 00:20:19,084

ALL THOSE EFFECTS ARE.

835

00:20:19,084 --> 00:20:19,952

AND THAT WAY,

836

00:20:19,952 --> 00:20:20,819

WE CAN COME UP WITH WAYS

837

00:20:20,819 --> 00:20:22,220

TO HELP PREVENT THE AGING,

838

00:20:22,220 --> 00:20:23,255

HELP PREVENT THE DAMAGE

839

00:20:23,255 --> 00:20:24,389

TO THE SKIN CELLS

840

00:20:24,389 --> 00:20:25,324

AND GET THE RESULTS

841

00:20:25,324 --> 00:20:26,224

A LOT FASTER,

842

00:20:26,224 --> 00:20:27,292

SO THAT'S BEEN A FASCINATING ONE

843

00:20:27,292 --> 00:20:29,127

TO WORK ON.

844

00:20:35,233 --> 00:20:36,435

>> HI, MY NAME IS

845

00:20:36,435 --> 00:20:37,436

ENRIQUE RIVERA

846

00:20:37,436 --> 00:20:38,503

FROM PARMA COMMUNITY MIDDLE

847

00:20:38,503 --> 00:20:39,571

IN PARMA, OHIO,

848

00:20:39,571 --> 00:20:40,606

AND MY QUESTION IS,

849

00:20:40,606 --> 00:20:42,808

HOW DO PLANTS GROW IN SPACE?

850

00:20:47,079 --> 00:20:48,213

>> WELL, ENRIQUE THEY, UH,

851
00:20:48,213 --> 00:20:49,214
WE HAVE A FEW DIFFERENT WAYS

852
00:20:49,214 --> 00:20:50,449
WE TRY TO GROW 'EM UP HERE.

853
00:20:50,449 --> 00:20:51,950
UM, YOU CAN'T QUITE SEE IT,

854
00:20:51,950 --> 00:20:53,018
BUT JUST OFF SCREEN HERE IS--

855
00:20:53,018 --> 00:20:54,119
WE, UH, WE CALL 'EM

856
00:20:54,119 --> 00:20:55,120
VEGGIE PILLOWS,

857
00:20:55,120 --> 00:20:56,121
AND IT'S ESSENTIALLY

858
00:20:56,121 --> 00:20:57,623
A PLASTIC BELLOWS

859
00:20:57,623 --> 00:20:58,757
WITH A PLATE ON THE BOTTOM,

860
00:20:58,757 --> 00:20:59,891
AND THAT LETS US CONTROL

861
00:20:59,891 --> 00:21:01,059
THE LIGHTING, UH,

862
00:21:01,059 --> 00:21:02,160
OF THE-- OF THE PLANTS.

863
00:21:02,160 --> 00:21:03,662

IN THAT PARTICULAR EXPERIMENT,

864

00:21:03,662 --> 00:21:04,796

WE ARE LOOKING AT DIFFERENT WAYS

865

00:21:04,796 --> 00:21:06,264

TO DELIVER WATER AND NUTRIENTS

866

00:21:06,264 --> 00:21:07,532

TO THE PLANTS IN A--

867

00:21:07,532 --> 00:21:09,267

IN A LESS USER-INTENSIVE WAY,

868

00:21:09,267 --> 00:21:10,369

MEANING THAT IT WAS

869

00:21:10,369 --> 00:21:11,303

A PASSIVE SYSTEM,

870

00:21:11,303 --> 00:21:12,471

LETTING THE WA-- THE PLANTS

871

00:21:12,471 --> 00:21:13,605

ABSORB THEIR OWN WATER.

872

00:21:13,605 --> 00:21:14,906

WE HAVE ANOTHER SYSTEM,

873

00:21:14,906 --> 00:21:16,708

UH, IN THE JAPANESE MODULE,

874

00:21:16,708 --> 00:21:17,909

THE JEM, WE CALL IT,

875

00:21:17,909 --> 00:21:19,111

THAT IS A MUCH, UH,

876
00:21:19,111 --> 00:21:20,178
MORE CONTROLLED THING,

877
00:21:20,178 --> 00:21:21,146
KIND OF LIKE A HYDROPONIC

878
00:21:21,146 --> 00:21:22,881
SYSTEM ON THE EARTH,

879
00:21:22,881 --> 00:21:23,749
WHERE WE'RE CONTROLLING

880
00:21:23,749 --> 00:21:24,783
THE GAS FLOW

881
00:21:24,783 --> 00:21:25,984
AND THE NUTRIENTS AND EVERYTHING

882
00:21:25,984 --> 00:21:26,985
INTO THE PLANTS,

883
00:21:26,985 --> 00:21:28,020
AND SO THERE'S A FEW

884
00:21:28,020 --> 00:21:28,987
DIFFERENT METHODS OF DOING THAT,

885
00:21:28,987 --> 00:21:29,821
AND WE'RE-WE'RE TRYING

886
00:21:29,821 --> 00:21:30,656
TO FIGURE OUT

887
00:21:30,656 --> 00:21:31,556
WHAT'S THE BEST WAY

888
00:21:31,556 --> 00:21:32,724

AND THE MOST TIME EFFICIENT WAY

889

00:21:32,724 --> 00:21:33,492

AND ALSO THINGS LIKE

890

00:21:33,492 --> 00:21:35,160

WHAT'S THE LIGHTEST WAY,

891

00:21:35,160 --> 00:21:36,228

UM, AND THE ONES THAT GET

892

00:21:36,228 --> 00:21:37,295

THE HEALTHIEST PLANTS

893

00:21:37,295 --> 00:21:38,330

THE FASTEST?

894

00:21:38,330 --> 00:21:39,131

SO THERE'S A FEW

895

00:21:39,131 --> 00:21:40,032

DIFFERENT WAYS WE DO THAT.

896

00:21:40,032 --> 00:21:41,066

THE-THE THIRD TYPE OF RESEARCH

897

00:21:41,066 --> 00:21:42,034

WE'RE DOING ON PLANTS

898

00:21:42,034 --> 00:21:43,001

AND GROWING IS ACTUALLY GROWING

899

00:21:43,001 --> 00:21:44,936

THEM AT THE CELLULAR LEVEL,

900

00:21:44,936 --> 00:21:45,737

AND SO ONE OF THE REALLY

901
00:21:45,737 --> 00:21:46,605
COOL THINGS ABOUT

902
00:21:46,605 --> 00:21:47,472
GROWING CELLS IN SPACE

903
00:21:47,472 --> 00:21:48,874
IS WITHOUT GRAVITY, UH,

904
00:21:48,874 --> 00:21:50,275
WHEN YOU GROW LARGE, BIG CHUNKS

905
00:21:50,275 --> 00:21:51,309
OF CELLS ON THE EARTH,

906
00:21:51,309 --> 00:21:52,077
THEY GET--

907
00:21:52,077 --> 00:21:52,978
THEY GET FLATTENED OUT,

908
00:21:52,978 --> 00:21:53,945
BUT WHEN THERE'S MICROGRAVITY,

909
00:21:53,945 --> 00:21:54,846
THEY CAN GROW

910
00:21:54,846 --> 00:21:55,614
THREE DIMENSIONALLY,

911
00:21:55,614 --> 00:21:56,481
AND SO YOU CAN GET LARGER

912
00:21:56,481 --> 00:21:57,549
STRUCTURES TO STUDY FASTER.

913
00:21:57,549 --> 00:21:58,316

SO WE'RE DOING THAT

914

00:21:58,316 --> 00:21:59,384
WITH COTTON PLANTS, UH,

915

00:21:59,384 --> 00:22:00,452
TO TRY TO FIND COTTON

916

00:22:00,452 --> 00:22:01,753
THAT IS MORE DROUGHT RESISTANT

917

00:22:01,753 --> 00:22:02,754
FOR IT TO HELP THE EARTH,

918

00:22:02,754 --> 00:22:04,423
BUT ALSO TO UNDERSTAND, UH,

919

00:22:04,423 --> 00:22:05,290
HOW TO GROW

920

00:22:05,290 --> 00:22:06,558
CHUNKS OF PLANT CELLS

921

00:22:06,558 --> 00:22:08,460
IN SPACE BETTER.

922

00:22:10,228 --> 00:22:11,229
>> HI, MY NAME IS

923

00:22:11,229 --> 00:22:12,531
TRISHELLE EDMONDS,

924

00:22:12,531 --> 00:22:13,799
AND I'M FROM HORIZON SCIENCE

925

00:22:13,799 --> 00:22:15,167
ACADEMY DENISON MIDDLE

926
00:22:15,167 --> 00:22:16,301
IN CLEVELAND, OHIO.

927
00:22:16,301 --> 00:22:17,469
AND MY QUESTION IS,

928
00:22:17,469 --> 00:22:18,336
IS IT HOT OR COLD

929
00:22:18,336 --> 00:22:20,272
IN OUTER SPACE?

930
00:22:22,541 --> 00:22:23,675
>> HI, TRISHELLE.

931
00:22:23,675 --> 00:22:24,776
THAT IS A GREAT QUESTION,

932
00:22:24,776 --> 00:22:25,877
AND THE ANSWER IS YES.

933
00:22:25,877 --> 00:22:26,812
IT'S BOTH.

934
00:22:26,812 --> 00:22:27,979
IT ALL DEPENDS ON

935
00:22:27,979 --> 00:22:29,014
WHAT PART OF THE OBJECT

936
00:22:29,014 --> 00:22:30,816
OR YOUR BODY IS FACING THE SUN.

937
00:22:30,816 --> 00:22:32,317
WE HAVE DIRECT, UH, UV

938
00:22:32,317 --> 00:22:33,318

AND ALL THE OTHER TYPES

939

00:22:33,318 --> 00:22:34,920

OF, UH, ELECTROMATIC--

940

00:22:34,920 --> 00:22:36,088

ELECTROMAGNETIC RADIATION

941

00:22:36,088 --> 00:22:36,988

COMING FROM THE SUN

942

00:22:36,988 --> 00:22:37,823

AND IT CAN BE

943

00:22:37,823 --> 00:22:39,691

250 DEGREES FAHRENHEIT

944

00:22:39,691 --> 00:22:41,193

IF YOU'RE FACING THE SUN.

945

00:22:41,193 --> 00:22:42,894

THE OTHER SIDE OF YOU,

946

00:22:42,894 --> 00:22:43,929

OR OF THE OBJECT,

947

00:22:43,929 --> 00:22:45,063

IS IN SHADOW, AND THAT CAN BE

948

00:22:45,063 --> 00:22:48,366

-250 DEGREES FAHRENHEIT.

949

00:22:48,366 --> 00:22:49,568

WE CAN ACTUALLY FEEL THAT

950

00:22:49,568 --> 00:22:50,769

WHEN WE'RE OUT ON A SPACE WALK.

951
00:22:50,769 --> 00:22:51,636
WE CAN FEEL

952
00:22:51,636 --> 00:22:52,571
A LITTLE BIT OF THE DIFFERENCE.

953
00:22:52,571 --> 00:22:53,338
OF COURSE, THE SUIT

954
00:22:53,338 --> 00:22:54,206
IS PROTECTING US

955
00:22:54,206 --> 00:22:54,973
BETWEEN THE REALLY HOT

956
00:22:54,973 --> 00:22:56,074
AND THE REALLY COLD

957
00:22:56,074 --> 00:22:58,110
ALL AT THE SAME TIME.

958
00:23:00,178 --> 00:23:01,613
>> MY NAME IS TRESHAUN WEEKLY,

959
00:23:01,613 --> 00:23:02,981
AND I AM FROM GINN ACADEMY

960
00:23:02,981 --> 00:23:04,616
IN CLEVELAND, OHIO.

961
00:23:04,616 --> 00:23:06,451
MY QUESTION IS,

962
00:23:06,451 --> 00:23:07,786
HOW OLD DO YOU HAVE TO BE

963
00:23:07,786 --> 00:23:09,221

TO BE ABLE TO GO INTO SPACE,

964

00:23:09,221 --> 00:23:11,623

AND HOW DO YOU EAT IN SPACE?

965

00:23:15,093 --> 00:23:16,128

>> SO, TRESHAUN, THERE'S REALLY

966

00:23:16,128 --> 00:23:17,496

NO AGE LIMIT THAT WE KNOW OF

967

00:23:17,496 --> 00:23:18,697

TO-TO COME UP IN SPACE.

968

00:23:18,697 --> 00:23:20,465

UM, USUALLY THE PEOPLE

969

00:23:20,465 --> 00:23:21,800

THAT HAVE COME UP IN THE PAST

970

00:23:21,800 --> 00:23:23,135

HAVE BEEN, UH,

971

00:23:23,135 --> 00:23:24,136

HAVE ALREADY GRADUATED COLLEGE,

972

00:23:24,136 --> 00:23:24,936

AND THAT'S KIND OF A RELIC

973

00:23:24,936 --> 00:23:26,138

OF THE FACT THAT YOU HAVE

974

00:23:26,138 --> 00:23:27,072

CERTAIN REQUIREMENTS

975

00:23:27,072 --> 00:23:28,507

TO BE AN ASTRONAUT AT NASA,

976
00:23:28,507 --> 00:23:29,407
BUT AS FAR AS WE KNOW,

977
00:23:29,407 --> 00:23:30,542
SCIENTIFICALLY, WE DON'T REALLY

978
00:23:30,542 --> 00:23:32,077
HAVE AN AGE LIMIT, PER SE.

979
00:23:32,077 --> 00:23:33,078
IN TERMS OF WHAT WE EAT

980
00:23:33,078 --> 00:23:34,546
UP HERE OR HOW WE EAT,

981
00:23:34,546 --> 00:23:35,847
UH, WE EAT VERY SIMILAR, UH,

982
00:23:35,847 --> 00:23:36,748
TO THE WAY YOU DO

983
00:23:36,748 --> 00:23:37,516
ON THE GROUND,

984
00:23:37,516 --> 00:23:38,283
EXCEPT WE HAVE

985
00:23:38,283 --> 00:23:38,950
A REALLY LONG SPOON

986
00:23:38,950 --> 00:23:39,651
TO DIG INTO PACKAGES.

987
00:23:39,651 --> 00:23:40,418
WE DON'T-- YOU DON'T OPEN

988
00:23:40,418 --> 00:23:41,186

THE PACKAGE UP,

989

00:23:41,186 --> 00:23:41,920
BECAUSE OTHERWISE FOOD

990

00:23:41,920 --> 00:23:42,654
WOULD GO EVERYWHERE,

991

00:23:42,654 --> 00:23:43,355
SO WE HAVE THESE

992

00:23:43,355 --> 00:23:44,089
REALLY LONG HANDLED SPOONS

993

00:23:44,089 --> 00:23:45,090
TO DIG DOWN,

994

00:23:45,090 --> 00:23:46,024
AND THEN THE OTHER THING

995

00:23:46,024 --> 00:23:46,792
THAT'S A LITTLE DIFFERENT

996

00:23:46,792 --> 00:23:47,492
ABOUT EATING UP HERE

997

00:23:47,492 --> 00:23:48,760
IS WE TRACK EVERYTHING WE EAT,

998

00:23:48,760 --> 00:23:49,761
UM, AND SO EVERY TIME

999

00:23:49,761 --> 00:23:51,229
YOU HAVE A SNACK,

1000

00:23:51,229 --> 00:23:53,565
A DRINK, FOOD, WE LOG IT.

1001
00:23:53,565 --> 00:23:54,766
UM, AND THEN THAT WAY,

1002
00:23:54,766 --> 00:23:56,067
THE PEOPLE ON THE GROUND, UH,

1003
00:23:56,067 --> 00:23:57,135
CAN KEEP TRACK OF EXACTLY

1004
00:23:57,135 --> 00:23:58,236
WHAT'S GOING INTO OUR BODIES.

1005
00:23:58,236 --> 00:23:59,204
LIKE TOM MENTIONED,

1006
00:23:59,204 --> 00:23:59,938
A LOT OF THE SCIENCE

1007
00:23:59,938 --> 00:24:00,739
IS UNDERSTANDING HOW

1008
00:24:00,739 --> 00:24:01,873
OUR BODIES CHANGE IN SPACE,

1009
00:24:01,873 --> 00:24:02,941
SO TO-TO UNDERSTAND

1010
00:24:02,941 --> 00:24:03,775
THE FULL EQUATION,

1011
00:24:03,775 --> 00:24:04,509
YOU HAVE TO KNOW

1012
00:24:04,509 --> 00:24:05,343
WHAT'S GOING INTO YOUR BODY

1013
00:24:05,343 --> 00:24:06,044

SO YOU CAN ANALYZE

1014

00:24:06,044 --> 00:24:07,078

WHAT COMES OUT OF YOUR BODY,

1015

00:24:07,078 --> 00:24:08,513

AND SO THERE'S ALSO SOME STUDIES

1016

00:24:08,513 --> 00:24:09,447

THAT TOM AND I ARE A PART OF

1017

00:24:09,447 --> 00:24:10,415

WHERE WE'RE ACTUALLY

1018

00:24:10,415 --> 00:24:11,750

DELIBERATELY CHOOSING

1019

00:24:11,750 --> 00:24:13,151

DIFFERENT TYPES OF FOOD

1020

00:24:13,151 --> 00:24:14,419

TO SEE IF THOSE HAVE, UH,

1021

00:24:14,419 --> 00:24:15,287

DIFFERENT EFFECTS THAN

1022

00:24:15,287 --> 00:24:16,154

SOME OF THE OTHER CREW MEMBERS,

1023

00:24:16,154 --> 00:24:17,222

SO SPECIFICALLY THINGS--

1024

00:24:17,222 --> 00:24:18,957

SOME LYCOPENE AND OMEGA-3

1025

00:24:18,957 --> 00:24:20,392

AND SOME OTHER TYPES

1026
00:24:20,392 --> 00:24:21,626
OF FOOD AND NUTRIENTS

1027
00:24:21,626 --> 00:24:22,561
THAT THEY'RE LOOKING AT TO SEE

1028
00:24:22,561 --> 00:24:23,528
IF THAT STOPS

1029
00:24:23,528 --> 00:24:24,496
SOME OF THE AGING

1030
00:24:24,496 --> 00:24:25,664
AND THE DAMAGE TO THE CELLS

1031
00:24:25,664 --> 00:24:26,865
THAT WE TYPICALLY SEE, UH,

1032
00:24:26,865 --> 00:24:28,867
IN THE SPACE ENVIRONMENT.

1033
00:24:29,868 --> 00:24:31,102
>> HI. MY NAME IS BRAYLON.

1034
00:24:31,102 --> 00:24:32,370
THE MEMBERS OF OUR ROBOTIC TEAM

1035
00:24:32,370 --> 00:24:33,338
ARE LEARNING ABOUT

1036
00:24:33,338 --> 00:24:34,706
THE IMPORTANCE OF TEAMWORK.

1037
00:24:34,706 --> 00:24:36,074
MY QUESTION IS,

1038
00:24:36,074 --> 00:24:37,742

HOW IMPORTANT IS TEAMWORK ABOARD

1039

00:24:37,742 --> 00:24:40,045

THE INTERNATIONAL SPACE STATION,

1040

00:24:40,045 --> 00:24:42,247

AND HOW TO DO CREW MEMBERS TRAIN

1041

00:24:42,247 --> 00:24:44,416

TO WORK EFFECTIVELY TOGETHER?

1042

00:24:48,220 --> 00:24:49,855

>> YOU KNOW, TEAMWORK UP HERE

1043

00:24:49,855 --> 00:24:51,323

IS ACTUALLY ESSENTIAL

1044

00:24:51,323 --> 00:24:52,824

FOR OUR SURVIVAL

1045

00:24:52,824 --> 00:24:53,758

AND ESSENTIAL FOR

1046

00:24:53,758 --> 00:24:54,826

GETTING THINGS DONE UP HERE.

1047

00:24:54,826 --> 00:24:55,894

IT'S JUST WAY TOO COMPLICATED

1048

00:24:55,894 --> 00:24:57,495

FOR ANY ONE PERSON TO DO IT.

1049

00:24:57,495 --> 00:24:59,898

SO, UM, TEAMWORK IS SOMETHING

1050

00:24:59,898 --> 00:25:00,999

WE ACTUALLY TRAIN ON

1051
00:25:00,999 --> 00:25:02,734
QUITE A BIT BEFORE WE FLY,

1052
00:25:02,734 --> 00:25:04,035
AND SOME OF THE WAYS WE DO THAT

1053
00:25:04,035 --> 00:25:05,070
IS FIRST OF ALL,

1054
00:25:05,070 --> 00:25:06,471
WE ALL LEARN TOGETHER.

1055
00:25:06,471 --> 00:25:07,572
WE'RE IN CLASSROOMS TOGETHER.

1056
00:25:07,572 --> 00:25:08,773
WE'RE IN SIMULATORS TOGETHER.

1057
00:25:08,773 --> 00:25:11,042
WE LEARN HOW EACH OTHER THINKS.

1058
00:25:11,042 --> 00:25:13,078
WE LEARN HOW WE, UH, AT--

1059
00:25:13,078 --> 00:25:14,112
WHAT PEOPLE LIKE

1060
00:25:14,112 --> 00:25:15,247
AND WHAT THEY DON'T LIKE,

1061
00:25:15,247 --> 00:25:16,314
AND IT'S ALL VERY IMPORTANT.

1062
00:25:16,314 --> 00:25:17,582
YOU GET TO-- REALLY GET

1063
00:25:17,582 --> 00:25:18,783

TO KNOW YOUR CREWMATES.

1064

00:25:18,783 --> 00:25:19,885

UM, SOMETIMES THEY WILL

1065

00:25:19,885 --> 00:25:20,652

PUT US OUT

1066

00:25:20,652 --> 00:25:21,820

IN AN UNCOMFORTABLE SITUATION

1067

00:25:21,820 --> 00:25:22,721

WHICH SOMETIMES

1068

00:25:22,721 --> 00:25:23,722

IS A LOT OF FUN.

1069

00:25:23,722 --> 00:25:24,756

IT MIGHT BE A SURVIVAL TRIP

1070

00:25:24,756 --> 00:25:25,523

IN THE MOUNTAINS,

1071

00:25:25,523 --> 00:25:26,491

BACKPACKING IN THE MOUNTAINS

1072

00:25:26,491 --> 00:25:27,726

OR IN THE CANYONS.

1073

00:25:27,726 --> 00:25:28,793

UH, SO WE CAN REALLY

1074

00:25:28,793 --> 00:25:29,661

GET TO KNOW OURSELVES

1075

00:25:29,661 --> 00:25:30,462

AND KIND OF GET TO KNOW

1076
00:25:30,462 --> 00:25:31,329
WHAT OUR LIMITS ARE

1077
00:25:31,329 --> 00:25:32,063
AND HOW WE CAN

1078
00:25:32,063 --> 00:25:32,931
HELP EACH OTHER OUT.

1079
00:25:32,931 --> 00:25:33,798
AND ALL THIS IS REALLY IMPORTANT

1080
00:25:33,798 --> 00:25:35,500
FOR DEVELOPING TEAMWORK

1081
00:25:35,500 --> 00:25:36,601
AND A GOOD TEAM CULTURE

1082
00:25:36,601 --> 00:25:38,303
BEFORE WE FLY.

1083
00:25:39,704 --> 00:25:40,872
>> HI, MY NAME

1084
00:25:40,872 --> 00:25:42,173
IS PRESTON THOMPSON,

1085
00:25:42,173 --> 00:25:43,875
AND I GO TO THE IPROMISE SCHOOL

1086
00:25:43,875 --> 00:25:45,410
IN AKRON, OHIO.

1087
00:25:45,410 --> 00:25:46,478
I HAVE QUESTIONS

1088
00:25:46,478 --> 00:25:47,646

ABOUT SLEEPING ROUTINES,

1089

00:25:47,646 --> 00:25:48,947

LIKE WHERE DO YOU GUYS SLEEP

1090

00:25:48,947 --> 00:25:50,081

AND HOW GRAVITY WORKS

1091

00:25:50,081 --> 00:25:51,917

WHEN YOU SLEEP.

1092

00:25:54,853 --> 00:25:55,820

>> HEY, PRESTON.

1093

00:25:55,820 --> 00:25:56,755

SO WHERE WE SLEEP

1094

00:25:56,755 --> 00:25:58,156

IS ACTUALLY IN THE FLOOR,

1095

00:25:58,156 --> 00:25:59,291

THE WALLS, AND THE CEILING.

1096

00:25:59,291 --> 00:26:00,392

SO ACTUALLY BEHIND ME,

1097

00:26:00,392 --> 00:26:01,359

OUR CREWMATE MATTHIAS,

1098

00:26:01,359 --> 00:26:02,594

OUR GERMAN ASTRONAUT,

1099

00:26:02,594 --> 00:26:03,962

THAT'S HIS CREW QUARTERS,

1100

00:26:03,962 --> 00:26:06,131

AND SO THERE'S, UH, ONE HERE,

1101
00:26:06,131 --> 00:26:07,065
AND THERE'S FOUR

1102
00:26:07,065 --> 00:26:07,866
IN ANOTHER MODULE,

1103
00:26:07,866 --> 00:26:08,700
AND TOM'S GONNA SHOW YOU.

1104
00:26:08,700 --> 00:26:09,467
BASICALLY, HE'S JUST GO INTO

1105
00:26:09,467 --> 00:26:10,669
WHAT LOOKS LIKE THE CEILING,

1106
00:26:10,669 --> 00:26:11,503
BUT UP HERE, YOU CAN'T TELL

1107
00:26:11,503 --> 00:26:12,570
IF IT'S A CEILING OR NOT,

1108
00:26:12,570 --> 00:26:13,505
AND INSIDE THERE

1109
00:26:13,505 --> 00:26:14,339
IS ABOUT THE SIZE

1110
00:26:14,339 --> 00:26:15,106
OF A SLEEPING BAG

1111
00:26:15,106 --> 00:26:15,874
AND A COMPUTER,

1112
00:26:15,874 --> 00:26:16,708
AND THAT'S WHAT WE USE IT FOR

1113
00:26:16,708 --> 00:26:17,509

IS TO SLEEP,

1114

00:26:17,509 --> 00:26:18,443
AND THEN ALSO TO BE ABLE

1115

00:26:18,443 --> 00:26:19,744
TO DO THINGS LIKE GET WORK DONE

1116

00:26:19,744 --> 00:26:20,912
IN THE EVENINGS, UH,

1117

00:26:20,912 --> 00:26:21,746
AND CORRESPOND

1118

00:26:21,746 --> 00:26:22,714
WITH PEOPLE AT HOME.

1119

00:26:22,714 --> 00:26:24,049
UH, IN TERMS OF WHAT--

1120

00:26:24,049 --> 00:26:26,384
HOW GRAVITY WORKS IN YOUR SLEEP,

1121

00:26:26,384 --> 00:26:27,152
IT'S KIND OF THE SAME

1122

00:26:27,152 --> 00:26:27,886
AS IT DOES DURING THE DAY.

1123

00:26:27,886 --> 00:26:28,653
SO YOU WOULD TEND

1124

00:26:28,653 --> 00:26:29,421
TO FLOAT AROUND.

1125

00:26:29,421 --> 00:26:30,322
DIFFERENT PEOPLE LIKE

1126
00:26:30,322 --> 00:26:31,089
TO DO DIFFERENT THINGS

1127
00:26:31,089 --> 00:26:31,790
WHEN THEY SLEEP.

1128
00:26:31,790 --> 00:26:32,557
SOME PEOPLE LIKE TO BE

1129
00:26:32,557 --> 00:26:34,025
RESTRAINED AND TO FEEL, UH,

1130
00:26:34,025 --> 00:26:35,393
VERY WRAPPED UP.

1131
00:26:35,393 --> 00:26:36,294
SOME PEOPLE LIKE

1132
00:26:36,294 --> 00:26:37,295
TO FLOAT AROUND.

1133
00:26:37,295 --> 00:26:38,296
UM, ONE THING THAT TAKES

1134
00:26:38,296 --> 00:26:39,164
YOUR BRAIN SOME TIME

1135
00:26:39,164 --> 00:26:40,098
TO GET USED TO

1136
00:26:40,098 --> 00:26:41,099
IS WHEN YOU'RE IN SPACE

1137
00:26:41,099 --> 00:26:42,400
THE FIRST FEW DAYS,

1138
00:26:42,400 --> 00:26:43,535

YOU ALWAYS FEEL LIKE

1139

00:26:43,535 --> 00:26:44,369

YOU'RE FALLING,

1140

00:26:44,369 --> 00:26:45,170

SO AS SOON AS

1141

00:26:45,170 --> 00:26:46,004

YOU CLOSE YOUR EYES,

1142

00:26:46,004 --> 00:26:46,871

YOU GET THE SENSATION

1143

00:26:46,871 --> 00:26:47,739

THAT YOU'RE STILL MOVING

1144

00:26:47,739 --> 00:26:48,740

AND STILL FALLING FORWARD,

1145

00:26:48,740 --> 00:26:49,507

SO IT'S REALLY HARD

1146

00:26:49,507 --> 00:26:50,575

TO FALL ASLEEP AT FIRST,

1147

00:26:50,575 --> 00:26:51,943

BECAUSE YOUR BRAIN JUST

1148

00:26:51,943 --> 00:26:53,044

DOESN'T WANT TO GO TO SLEEP

1149

00:26:53,044 --> 00:26:53,812

WHEN IT FEELS

1150

00:26:53,812 --> 00:26:54,646

LIKE IT'S FALLING DOWN,

1151
00:26:54,646 --> 00:26:55,847
SO IT TAKES A FEW DAYS

1152
00:26:55,847 --> 00:26:56,848
FOR YOUR BRAIN TO ADJUST TO THAT

1153
00:26:56,848 --> 00:26:58,149
TO BE ABLE TO SLEEP NORMALLY,

1154
00:26:58,149 --> 00:27:00,251
UM, BUT ONCE THAT HAPPENS, UH,

1155
00:27:00,251 --> 00:27:01,653
IT'S JUST PERSONAL PREFERENCE

1156
00:27:01,653 --> 00:27:02,620
ON HOW TIGHTLY

1157
00:27:02,620 --> 00:27:03,822
YOU WANT TO BE HELD BY--

1158
00:27:03,822 --> 00:27:04,823
WE USE BUNGEE CORDS

1159
00:27:04,823 --> 00:27:05,857
TO HOLD US DOWN.

1160
00:27:05,857 --> 00:27:07,025
UH, AND IT JUST DEPENDS ON

1161
00:27:07,025 --> 00:27:08,026
HOW TIGHT YOU WANT TO BE

1162
00:27:08,026 --> 00:27:10,061
HELD DOWN WHILE YOU'RE SLEEPING.

1163
00:27:11,563 --> 00:27:14,499

>> MY NAME IS LONDYN DAVIS.

1164

00:27:14,499 --> 00:27:16,534
MY QUESTION IS,

1165

00:27:16,534 --> 00:27:18,503
DO YOU MISS YOUR FAMILY,

1166

00:27:18,503 --> 00:27:19,838
AND CAN YOU TALK TO THEM

1167

00:27:19,838 --> 00:27:21,740
FROM SPACE?

1168

00:27:25,377 --> 00:27:26,111
>> HI, LONDYN.

1169

00:27:26,111 --> 00:27:27,045
YEAH, WE ALL MISS

1170

00:27:27,045 --> 00:27:28,313
OUR FAMILIES QUITE A BIT,

1171

00:27:28,313 --> 00:27:30,415
AND SO THE GOOD THING IS,

1172

00:27:30,415 --> 00:27:32,350
WE ARE ABLE TO EMAIL THEM.

1173

00:27:32,350 --> 00:27:33,351
IT'S NOT ALWAYS AS FAST

1174

00:27:33,351 --> 00:27:34,219
AS ON THE GROUND,

1175

00:27:34,219 --> 00:27:34,986
'CAUSE WE HAVE TO BOUNCE OFF

1176
00:27:34,986 --> 00:27:35,920
A SATELLITE.

1177
00:27:35,920 --> 00:27:36,755
UH, WE CAN HAVE

1178
00:27:36,755 --> 00:27:38,223
VIDEO CONFERENCES WITH THEM

1179
00:27:38,223 --> 00:27:39,357
AND, UH, ACTUALLY SEE

1180
00:27:39,357 --> 00:27:40,291
THEIR FACES AND HAVE

1181
00:27:40,291 --> 00:27:41,292
A REALTIME CONVERSATION

1182
00:27:41,292 --> 00:27:42,027
WITH THEM,

1183
00:27:42,027 --> 00:27:42,961
AND THAT'S ABOUT EVERY WEEK,

1184
00:27:42,961 --> 00:27:43,862
BUT VERY IMPORTANTLY,

1185
00:27:43,862 --> 00:27:44,662
WE CAN ACTUALLY

1186
00:27:44,662 --> 00:27:45,697
MAKE A PHONE CALL.

1187
00:27:45,697 --> 00:27:46,464
WE CAN CALL THEM,

1188
00:27:46,464 --> 00:27:47,332

BUT THEY CAN'T, UH,

1189

00:27:47,332 --> 00:27:48,466

CALL US BACK.

1190

00:27:48,466 --> 00:27:49,567

AND SO THOSE ARE

1191

00:27:49,567 --> 00:27:51,369

THE THREE BEST WAYS, I THINK,

1192

00:27:51,369 --> 00:27:52,203

THAT WE CAN KEEP IN TOUCH

1193

00:27:52,203 --> 00:27:53,038

WITH THE FAMILY,

1194

00:27:53,038 --> 00:27:53,905

AND JUST ABOUT EVERY DAY,

1195

00:27:53,905 --> 00:27:54,706

WE'RE IN TOUCH

1196

00:27:54,706 --> 00:27:56,408

WITH OUR FAMILIES.

1197

00:27:57,475 --> 00:27:58,209

>> HI, I'M U.S. SENATOR

1198

00:27:58,209 --> 00:27:59,544

ROB PORTMAN.

1199

00:27:59,544 --> 00:28:00,712

I JUST WANTED TO TAKE A MOMENT

1200

00:28:00,712 --> 00:28:02,380

TO CELEBRATE THIS UNIQUE

1201
00:28:02,380 --> 00:28:03,581
NASA ASTRONAUT EVENT

1202
00:28:03,581 --> 00:28:04,482
TAKING PLACE AT

1203
00:28:04,482 --> 00:28:05,316
THE GLENN RESEARCH CENTER

1204
00:28:05,316 --> 00:28:06,684
WITH ALL OF YOU.

1205
00:28:06,684 --> 00:28:07,886
TO THE STUDENTS, THE EDUCATORS,

1206
00:28:07,886 --> 00:28:08,953
AND OUR LEADERS AT THE OHIO

1207
00:28:08,953 --> 00:28:10,522
DEPARTMENT OF EDUCATION

1208
00:28:10,522 --> 00:28:11,489
WHO ARE CRITICAL TO OUR

1209
00:28:11,489 --> 00:28:12,590
ROBUST STEM EDUCATION

1210
00:28:12,590 --> 00:28:14,426
HERE IN OHIO, CONGRATULATIONS.

1211
00:28:14,426 --> 00:28:15,727
OUR FLOURISHING STEM PROGRAMMING

1212
00:28:15,727 --> 00:28:16,594
ACROSS THE STATE

1213
00:28:16,594 --> 00:28:17,695

IS ONE OF THE REASONS

1214

00:28:17,695 --> 00:28:18,797

THE BUCKEYE STATE CONTINUES

1215

00:28:18,797 --> 00:28:20,198

TO PLAY A LEADING ROLE

1216

00:28:20,198 --> 00:28:22,133

IN THE FUTURE OF SPACE FLIGHT.

1217

00:28:22,133 --> 00:28:23,034

IT'S ALWAYS GREAT TO SEE

1218

00:28:23,034 --> 00:28:24,002

STUDENTS TAKE ADVANTAGE OF THE

1219

00:28:24,002 --> 00:28:25,870

STEM EDUCATION OPPORTUNITIES.

1220

00:28:25,870 --> 00:28:26,938

I KNOW SOME OF YOU ARE

1221

00:28:26,938 --> 00:28:28,039

TUNING IN FROM THE GREAT LAKES

1222

00:28:28,039 --> 00:28:29,274

SCIENCE CENTER,

1223

00:28:29,274 --> 00:28:30,442

WHICH IS A PERFECT EXAMPLE

1224

00:28:30,442 --> 00:28:31,709

OF OHIO STEM EDUCATION

1225

00:28:31,709 --> 00:28:32,911

IN ACTION.

1226

00:28:32,911 --> 00:28:34,245

UH, I-I LOVE THAT CENTER.

1227

00:28:34,245 --> 00:28:35,346

I LOVE THE FACT THAT, UH,

1228

00:28:35,346 --> 00:28:36,347

YOUNG PEOPLE ARE ABLE

1229

00:28:36,347 --> 00:28:37,215

TO GO THERE

1230

00:28:37,215 --> 00:28:38,716

AND TO GET HANDS-ON EXPERIENCES

1231

00:28:38,716 --> 00:28:40,118

AND THEREFORE GET MORE INTEREST

1232

00:28:40,118 --> 00:28:42,187

AND INVOLVEMENT IN SCIENCE.

1233

00:28:42,187 --> 00:28:43,855

I'VE EVEN SEEN AN ECLIPSE THERE.

1234

00:28:43,855 --> 00:28:44,756

THAT'S WHERE I CHOSE TO BE

1235

00:28:44,756 --> 00:28:45,657

FOR THE ECLIPSE, UH,

1236

00:28:45,657 --> 00:28:47,692

AT NASA GLENN AND AT THE CENTER.

1237

00:28:47,692 --> 00:28:48,760

ANYWAY, IT'S MY HONOR

1238

00:28:48,760 --> 00:28:49,694

TO REPRESENT ALL OF YOU

1239

00:28:49,694 --> 00:28:51,262

IN THE UNITED STATES SENATE.

1240

00:28:51,262 --> 00:28:52,464

BEST OF LUCK IN YOUR FUTURE,

1241

00:28:52,464 --> 00:28:53,364

AND HOPE TO GET TO SEE YOU SOON

1242

00:28:53,364 --> 00:28:55,066

BACK IN OHIO.

1243

00:28:59,170 --> 00:29:00,371

>> THANKS VERY MUCH, SENATORS,

1244

00:29:00,371 --> 00:29:01,506

AND TO ALL THE KIDS

1245

00:29:01,506 --> 00:29:02,540

IN THE SCHOOLS THERE.

1246

00:29:02,540 --> 00:29:03,408

WE ENJOYED ANSWERING

1247

00:29:03,408 --> 00:29:04,242

YOUR QUESTIONS,

1248

00:29:04,242 --> 00:29:05,243

AND WE'LL LEAVE YOU WITH A VIEW

1249

00:29:05,243 --> 00:29:07,178

OF OUR, UH, ASTROBEEES,

1250

00:29:07,178 --> 00:29:08,346

OUR ROBOTS.

1251
00:29:08,346 --> 00:29:10,315
HAVE A GOOD AFTERNOON.

1252
00:29:12,016 --> 00:29:12,917
>> STATION, THIS IS

1253
00:29:12,917 --> 00:29:13,852
HOUSTON ACR.

1254
00:29:13,852 --> 00:29:16,287
THAT CONCLUDES THE EVENT.

1255
00:29:18,223 --> 00:29:19,023
>> THANK YOU

1256
00:29:19,023 --> 00:29:19,824
TO ALL PARTICIPANTS.

1257
00:29:19,824 --> 00:29:20,658
STATION, WE ARE NOW

1258
00:29:20,658 --> 00:29:21,626
RESUMING OPERATIONAL

1259
00:29:21,626 --> 00:29:23,495
AUDIO COMMUNICATIONS.

1260
00:29:30,401 --> 00:29:31,269
>> THANK YOU TO

1261
00:29:31,269 --> 00:29:33,571
THE EXPEDITION 66 CREWMEMBERS

1262
00:29:33,571 --> 00:29:35,406
FOR ANSWERING THE QUESTIONS

1263
00:29:35,406 --> 00:29:37,008

ASKED BY THE STUDENTS.

1264

00:29:37,008 --> 00:29:38,543

I HOPE YOU ALL ENJOYED

1265

00:29:38,543 --> 00:29:40,111

THIS PORTION OF THE PROGRAM

1266

00:29:40,111 --> 00:29:41,779

AS MUCH AS I DID

1267

00:29:41,779 --> 00:29:43,248

AND FEEL INSPIRED