
CAM 12
006 16:15:28.698

1
00:00:03,470 --> 00:00:02,210
this is Mission Control Houston as we

2
00:00:05,300 --> 00:00:03,480
take a loo inside the space station

3
00:00:07,160 --> 00:00:05,310
flight control room here at the Johnson

4
00:00:10,070 --> 00:00:07,170
Space Center we're gonna go now to dr.

5
00:00:11,690 --> 00:00:10,080
Jeff Goldstein who is part of the center

6
00:00:12,950 --> 00:00:11,700
director he is the center director of

7
00:00:16,220 --> 00:00:12,960
the National Center for Earth and space

8
00:00:17,900 --> 00:00:16,230
science education up in Maryland he is

9
00:00:19,429 --> 00:00:17,910
intimately involved with some of these

10
00:00:21,529 --> 00:00:19,439
student experiments that are flying up

11
00:00:23,210 --> 00:00:21,539
on the orbital science this is a dr.

12
00:00:25,960 --> 00:00:23,220
Goldstein first of all welcome to a NASA

13
00:00:28,580 --> 00:00:25,970

television how are you doing very good

14
00:00:30,470 --> 00:00:28,590
so let's talk about what's ahead for

15
00:00:32,510 --> 00:00:30,480
this flight it's been a long wait for

16
00:00:34,040 --> 00:00:32,520
this particular mission it was due to

17
00:00:35,810 --> 00:00:34,050
launch in December now it's we're here

18
00:00:37,970 --> 00:00:35,820
we are in January with it on the pad

19
00:00:39,799 --> 00:00:37,980
ready to go talk about first of all

20
00:00:41,869 --> 00:00:39,809
what's onboard and sort of the the

21
00:00:43,549 --> 00:00:41,879
excitement from the student side are

22
00:00:44,840 --> 00:00:43,559
they ready to go and ready to take a

23
00:00:46,610 --> 00:00:44,850
look at this rocket as it heads up to

24
00:00:48,560 --> 00:00:46,620
the space station yeah everybody's

25
00:00:51,560 --> 00:00:48,570
really looking forward to this

26
00:00:54,260 --> 00:00:51,570
we have 23 experiments that are flying

27
00:00:56,900 --> 00:00:54,270
as part of the student Space Flight

28
00:00:59,479 --> 00:00:56,910
experiments program and each of these

29
00:01:01,189 --> 00:00:59,489
experiments represents a community

30
00:01:03,740 --> 00:01:01,199
across the u.s. we even have one

31
00:01:07,160 --> 00:01:03,750
community in Stonewall Manitoba Canada

32
00:01:11,330 --> 00:01:07,170
where each community had a real science

33
00:01:12,980 --> 00:01:11,340
competition to design and select a and

34
00:01:15,499 --> 00:01:12,990
experiment to fly to the International

35
00:01:18,350 --> 00:01:15,509
Space Station in diverse science

36
00:01:21,170 --> 00:01:18,360
disciplines so each of these experiments

37
00:01:23,030 --> 00:01:21,180
represents the culmination of hundreds

38
00:01:24,679 --> 00:01:23,040

of students that were fully immersed in

39
00:01:25,580 --> 00:01:24,689
microgravity experiment design and

40
00:01:29,359 --> 00:01:25,590
proposal writing

41
00:01:32,240 --> 00:01:29,369
so we have the SSEP program has two

42
00:01:36,710 --> 00:01:32,250
flight Opportunities a year and we've

43
00:01:39,560 --> 00:01:36,720
got 12 experiments on our mission 3b

44
00:01:42,850 --> 00:01:39,570
payload going up and 11 experiments on

45
00:01:45,260 --> 00:01:42,860
our mission for payload going up and

46
00:01:46,639 --> 00:01:45,270
these students are really excited

47
00:01:47,990 --> 00:01:46,649
they're they're all going to be

48
00:01:49,520 --> 00:01:48,000
conducting their ground truth

49
00:01:51,469 --> 00:01:49,530
experiments at the same time the

50
00:01:54,139 --> 00:01:51,479
experiments are being conducted on orbit

51
00:01:56,810 --> 00:01:54,149
and we've got experiments in

52
00:02:01,609 --> 00:01:56,820
microbiology stem cell research

53
00:02:04,810 --> 00:02:01,619
nanotubes mutations of DNA fermentation

54
00:02:08,059 --> 00:02:04,820
and space development of salamander

55
00:02:12,440 --> 00:02:08,069
salamander eggs really a very wide

56
00:02:13,330 --> 00:02:12,450
variety of research disciplines so how

57
00:02:15,220 --> 00:02:13,340
do these students

58
00:02:16,720 --> 00:02:15,230
with these experiments because taking a

59
00:02:18,010 --> 00:02:16,730
look at them you know I got admitted

60
00:02:19,240 --> 00:02:18,020
it's quite a bit different than some of

61
00:02:21,309 --> 00:02:19,250
the stuff that I studied whenever I was

62
00:02:22,900 --> 00:02:21,319
in I was in junior high in high school I

63
00:02:24,070 --> 00:02:22,910

mean some of it yeah this is real

64
00:02:26,170 --> 00:02:24,080
science that they're doing so you know

65
00:02:27,940 --> 00:02:26,180
how do they how do they come up with it

66
00:02:29,500 --> 00:02:27,950
and what is it like for them to actually

67
00:02:31,150 --> 00:02:29,510
fly something actually up to the space

68
00:02:32,440 --> 00:02:31,160
station itself yeah it's a very good

69
00:02:35,199 --> 00:02:32,450
question you know I think the first

70
00:02:37,360 --> 00:02:35,209
starting point to answer that is to say

71
00:02:40,150 --> 00:02:37,370
that what we wanted to do is present a

72
00:02:42,729 --> 00:02:40,160
program that provides an absolutely

73
00:02:45,070 --> 00:02:42,739
authentic immersion in every facet of

74
00:02:46,600 --> 00:02:45,080
real research to students and it's a

75
00:02:49,630 --> 00:02:46,610
recognition that our students are fully

76
00:02:51,430 --> 00:02:49,640
capable of doing that kind of research I

77
00:02:53,259 --> 00:02:51,440
mean researchers are in the business of

78
00:02:55,150 --> 00:02:53,269
organized curiosity and evidence-based

79
00:02:58,059 --> 00:02:55,160
learning for the in for the human race

80
00:02:59,740 --> 00:02:58,069
but our children are born curious and

81
00:03:02,470 --> 00:02:59,750
they're born evidence-based learners so

82
00:03:06,670 --> 00:03:02,480
they're fully capable of taking this on

83
00:03:09,190 --> 00:03:06,680
and so the idea is to recognize that the

84
00:03:12,640 --> 00:03:09,200
the idea of microgravity research is

85
00:03:14,530 --> 00:03:12,650
that if you put a system whether it's a

86
00:03:16,630 --> 00:03:14,540
physical chemical or biological system

87
00:03:18,729 --> 00:03:16,640
in a freely falling environment like the

88
00:03:21,250 --> 00:03:18,739

International Space Station it will

89
00:03:23,949 --> 00:03:21,260
behave as if gravity is seemingly turned

90
00:03:26,170 --> 00:03:23,959
off and so if you want to understand

91
00:03:28,090 --> 00:03:26,180
what the role of gravity is in a

92
00:03:30,729 --> 00:03:28,100
physical chemical or biological system

93
00:03:33,940 --> 00:03:30,739
you can take it to a freely falling lab

94
00:03:37,240 --> 00:03:33,950
like ISS and do the same experiment on

95
00:03:39,130 --> 00:03:37,250
earth with gravity present and a

96
00:03:41,470 --> 00:03:39,140
comparison of those two experiments when

97
00:03:43,750 --> 00:03:41,480
they come back allows you to assess the

98
00:03:46,210 --> 00:03:43,760
role of gravity so what these students

99
00:03:48,640 --> 00:03:46,220
are really doing is looking at the world

100
00:03:50,770 --> 00:03:48,650
around them and asking a very simple

101
00:03:52,990 --> 00:03:50,780
question what kind of physical chemical

102
00:03:55,870 --> 00:03:53,000
or biological system that do I see an

103
00:03:58,479 --> 00:03:55,880
operation here that I would like to

104
00:04:01,979 --> 00:03:58,489
assess in terms of the role of gravity

105
00:04:04,660 --> 00:04:01,989
in that system and so it's really how

106
00:04:06,729 --> 00:04:04,670
scientists do their thing in the

107
00:04:10,000 --> 00:04:06,739
professional world they see a problem

108
00:04:13,059 --> 00:04:10,010
that's exciting to them they pose it in

109
00:04:16,659 --> 00:04:13,069
a way that could secure research assets

110
00:04:18,069 --> 00:04:16,669
and they go in a farm do you think this

111
00:04:20,409 --> 00:04:18,079
will inspire some of the students you

112
00:04:21,820 --> 00:04:20,419
know as they get into college and in you

113
00:04:23,649 --> 00:04:21,830

know choose what kind of career they

114
00:04:25,600 --> 00:04:23,659
want to head toward do you think that

115
00:04:26,660 --> 00:04:25,610
this will sort of be a launching pad for

116
00:04:29,480 --> 00:04:26,670
some of them but

117
00:04:31,910 --> 00:04:29,490
figuratively absolutely we are seeing so

118
00:04:34,910 --> 00:04:31,920
much information on the impact of this

119
00:04:37,040 --> 00:04:34,920
program not only in terms of changing

120
00:04:39,140 --> 00:04:37,050
students view of how science and

121
00:04:40,880 --> 00:04:39,150
research are actually done and the

122
00:04:43,910 --> 00:04:40,890
possibilities that they can get involved

123
00:04:46,280 --> 00:04:43,920
in a career in STEM education it's also

124
00:04:48,320 --> 00:04:46,290
changing the way teachers teach because

125
00:04:51,170 --> 00:04:48,330
this is really about ownership and

126
00:04:53,090 --> 00:04:51,180
learning being able to ask powerful

127
00:04:55,850 --> 00:04:53,100
questions critical thinking

128
00:04:58,220 --> 00:04:55,860
problem-solving being able to navigate

129
00:05:01,310 --> 00:04:58,230
an interdisciplinary landscape at will

130
00:05:02,990 --> 00:05:01,320
which is what researchers all do and we

131
00:05:04,910 --> 00:05:03,000
in fact even have a scholarly

132
00:05:06,980 --> 00:05:04,920
publication out of this one of the high

133
00:05:09,440 --> 00:05:06,990
school students that started off on the

134
00:05:12,290 --> 00:05:09,450
final two flights of the shuttle now has

135
00:05:15,580 --> 00:05:12,300
a publication in a refereed journal so

136
00:05:19,130 --> 00:05:15,590
what we're really seeing here is

137
00:05:22,370 --> 00:05:19,140
influence on on the next generation of

138
00:05:23,540 --> 00:05:22,380

scientists and engineers so for teachers

139
00:05:26,090 --> 00:05:23,550
and students that are out there watching

140
00:05:27,380 --> 00:05:26,100
this you know when's the next

141
00:05:28,670 --> 00:05:27,390
opportunity that they could fly

142
00:05:31,250 --> 00:05:28,680
something if they're interested in what

143
00:05:33,680 --> 00:05:31,260
do they need to do well if they if they

144
00:05:35,210 --> 00:05:33,690
do a Google search on student Space

145
00:05:37,310 --> 00:05:35,220
Flight experiments program it will take

146
00:05:39,800 --> 00:05:37,320
us take them right to our website and

147
00:05:42,020 --> 00:05:39,810
the next flight opportunity is mission

148
00:05:43,370 --> 00:05:42,030
seven to the International Space Station

149
00:05:45,620 --> 00:05:43,380
there's going to be a formal national

150
00:05:47,300 --> 00:05:45,630
announcement in February but they

151
00:05:49,810 --> 00:05:47,310
certainly can contact us now on the

152
00:05:53,120 --> 00:05:49,820
contact button on the website and

153
00:05:58,430 --> 00:05:53,130
mission seven has an experiment design

154
00:06:02,900 --> 00:05:58,440
phase in in fall of 2014 with a flight

155
00:06:06,020 --> 00:06:02,910
to ISS scheduled for spring of 2015 so

156
00:06:08,750 --> 00:06:06,030
it's all the 2014-2015 academic year and

157
00:06:11,510 --> 00:06:08,760
each community that participates in the

158
00:06:13,700 --> 00:06:11,520
program is providing a real microgravity

159
00:06:15,980 --> 00:06:13,710
research mini laboratory and launch

160
00:06:17,630 --> 00:06:15,990
services to get that mini lab containing

161
00:06:20,930 --> 00:06:17,640
a single student team designed

162
00:06:22,910 --> 00:06:20,940
experiment to ISS have an astronaut

163
00:06:25,430 --> 00:06:22,920

operate the experiment according to the

164
00:06:28,580 --> 00:06:25,440
student protocol and have it returned

165
00:06:30,230 --> 00:06:28,590
safely for harvesting and analysis and

166
00:06:33,050 --> 00:06:30,240
this program by the way I should point

167
00:06:36,380 --> 00:06:33,060
out is made possible through a Space Act

168
00:06:38,510 --> 00:06:36,390
agreement between NASA and NanoRacks to

169
00:06:40,310 --> 00:06:38,520
fly commercial payloads so this is I

170
00:06:43,100 --> 00:06:40,320
believe the first you

171
00:06:45,560 --> 00:06:43,110
national stem education initiative that

172
00:06:48,050 --> 00:06:45,570
provides on-orbit access done on the

173
00:06:49,790 --> 00:06:48,060
commercial space side and all of the

174
00:06:51,530 --> 00:06:49,800
students the thousands of students

175
00:06:54,140 --> 00:06:51,540
participating in this program understand

176
00:06:57,200 --> 00:06:54,150
that they're part of the history of this

177
00:06:59,390 --> 00:06:57,210
new era of commercial space well to take

178
00:07:00,650 --> 00:06:59,400
a look at more information about the

179
00:07:02,360 --> 00:07:00,660
student experience that are flying as

180
00:07:04,220 --> 00:07:02,370
part of this orbital sciences flight

181
00:07:05,960 --> 00:07:04,230
this week we invite you to log on to

182
00:07:08,690 --> 00:07:05,970
nasa.gov slash orbital we've got links

183
00:07:10,160 --> 00:07:08,700
there to dr. Jeff Goldstein so web page

184
00:07:12,230 --> 00:07:10,170
the home page for the student

185
00:07:13,670 --> 00:07:12,240
experiments you can read about what the

186
00:07:14,990 --> 00:07:13,680
kids and students are going to be doing

187
00:07:16,340 --> 00:07:15,000
as well as the schools that they're from