SpacetoGround

1
00:00:07,030 --> 00:00:05,030
houston station on space to ground

2
00:00:09,589 --> 00:00:07,040
welcome to space to ground i'm nella for

3
00:00:11,589 --> 00:00:09,599
ramji another week of spacewalks and

4
00:00:13,509 --> 00:00:11,599
biomining with microbes are just some of

5
00:00:14,910 --> 00:00:13,519
the exciting things happening aboard the

6
00:00:17,510 --> 00:00:14,920
international space

7
00:00:19,590 --> 00:00:17,520
station on thursday september 9th

8
00:00:21,910 --> 00:00:19,600
russian cosmonauts oleg novitskiy and

9
00:00:23,990 --> 00:00:21,920
piotr duprov ventured outside the poisk

10
00:00:26,230 --> 00:00:24,000
airlock and continued to prepare the new

11
00:00:28,550 --> 00:00:26,240
russian multipurpose laboratory module

12
00:00:30,630 --> 00:00:28,560
for operations this is their second

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

spacewalk in a week and is a part of a

14
00:00:33,910 --> 00:00:32,320
series of spacewalks required to

15
00:00:35,270 --> 00:00:33,920
complete the outfitting steps for the

16
00:00:37,270 --> 00:00:35,280
new module

17
00:00:39,350 --> 00:00:37,280
three days later on sunday september

18
00:00:41,830 --> 00:00:39,360
12th jaxa astronaut and station

19
00:00:44,069 --> 00:00:41,840
commander aki hoshide and issa astronaut

20
00:00:45,910 --> 00:00:44,079
toma pisgate we'll exit the quest

21
00:00:47,750 --> 00:00:45,920
airlock to modify the port 4 truss

22
00:00:49,590 --> 00:00:47,760
structure and prepare the orbital lab

23
00:00:51,910 --> 00:00:49,600
for its third set of roll-out solar

24
00:00:55,189 --> 00:00:51,920
arrays you can watch the spacewalk on

25
00:00:57,750 --> 00:00:55,199
nasa tv nasa.gov and the nasa app

26
00:00:59,270 --> 00:00:57,760
coverage is set to begin at 7am eastern

27
00:01:01,349 --> 00:00:59,280
time

28
00:01:03,029 --> 00:01:01,359
in science this week new developments on

29
00:01:05,189 --> 00:01:03,039
biomining with microbes and

30
00:01:07,429 --> 00:01:05,199
investigating gene's expression in space

31
00:01:09,670 --> 00:01:07,439
with the 2020 genes in space challenge

32
00:01:11,510 --> 00:01:09,680
winner kept astronauts busy aboard the

33
00:01:13,350 --> 00:01:11,520
orbiting laboratory

34
00:01:15,030 --> 00:01:13,360
new results were recently published on

35
00:01:17,350 --> 00:01:15,040
the bio rock investigation which

36
00:01:19,990 --> 00:01:17,360
demonstrated how microbes can extract

37
00:01:22,070 --> 00:01:20,000
rare earth elements from basalt in space

38
00:01:24,789 --> 00:01:22,080

basalt is a common rock on the moon in

39
00:01:27,030 --> 00:01:24,799
mars the team has now shown that

40
00:01:29,350 --> 00:01:27,040
microbes can not only mine elements in

41
00:01:31,190 --> 00:01:29,360
space but some microbes may also perform

42
00:01:33,510 --> 00:01:31,200
even better under such altered

43
00:01:35,429 --> 00:01:33,520
gravitational conditions biorock

44
00:01:38,310 --> 00:01:35,439
researchers observed an increase of

45
00:01:41,030 --> 00:01:38,320
vanadium biomining as much as 283

46
00:01:43,109 --> 00:01:41,040
percent under reduced gravity conditions

47
00:01:45,510 --> 00:01:43,119
these results show that fire mining may

48
00:01:47,510 --> 00:01:45,520
be possible on a larger scale in space

49
00:01:50,389 --> 00:01:47,520
extracting elements that humans need to

50
00:01:52,389 --> 00:01:50,399
sustain themselves independent of earth

51
00:01:54,310 --> 00:01:52,399
some pharmaceuticals used to maintain

52
00:01:56,550 --> 00:01:54,320
astronaut health do not work as well in

53
00:01:58,230 --> 00:01:56,560
space this may be linked to changes in

54
00:02:01,190 --> 00:01:58,240
levels of the liver enzymes that

55
00:02:03,190 --> 00:02:01,200
metabolize most drugs genes in space 8

56
00:02:05,830 --> 00:02:03,200
test the genes in space fluorescence

57
00:02:08,150 --> 00:02:05,840
viewer a new technology for visualizing

58
00:02:09,990 --> 00:02:08,160
biomolecules like dna in this

59
00:02:11,750 --> 00:02:10,000
investigation it will be used to monitor

60
00:02:14,309 --> 00:02:11,760
the expression of genes that control

61
00:02:16,229 --> 00:02:14,319
critical liver enzymes this test could

62
00:02:18,150 --> 00:02:16,239
lead to a better understanding of space

63
00:02:19,750 --> 00:02:18,160

flight induced changes in liver gene

64
00:02:21,350 --> 00:02:19,760
expression and may support the

65
00:02:23,270 --> 00:02:21,360
development of new therapies that can

66
00:02:25,510 --> 00:02:23,280
account for the body's adaptations to

67
00:02:27,510 --> 00:02:25,520
space flight the tool being tested to

68
00:02:29,510 --> 00:02:27,520
study these changes in space could also

69
00:02:31,509 --> 00:02:29,520
aid in patient monitoring in remote

70
00:02:33,190 --> 00:02:31,519
areas on earth

71
00:02:34,869 --> 00:02:33,200
that's space to ground for this week for

72
00:02:37,190 --> 00:02:34,879
all of the latest updates head over to

73
00:02:40,790 --> 00:02:37,200
nasa.gov thanks for watching we'll see

74
00:02:40,800 --> 00:02:45,830
[Music]