NORTHROP GRUMMAN CRS-10
WHAT'S ON BOARD?

1
00:00:16,180 --> 00:00:21,500
the refabricator is a combination 3d
printer and recycler and it was designed

2
00:00:21,580 --> 00:00:25,150
and developed through a small business
contract first off when we're going to

3
00:00:25,150 --> 00:00:29,500
go to space the main thing is that we
have to have spares it's a very

4
00:00:29,500 --> 00:00:35,350
tremendous mass it has to be launched to
space so we've got to find a sustainable

5
00:00:35,350 --> 00:00:39,670
source for filament so on the ISS we
know that there's multitudes and

6
00:00:39,670 --> 00:00:44,110
multitudes of plastic baggies if we can
recycle these then we're on our way to

7
00:00:44,110 --> 00:00:49,390
getting our filament once the refabricator
recycles and makes new filament we were

8
00:00:49,390 --> 00:00:56,140
able to print new parts this will allow
us to have samples of not only the 3d

9
00:00:56,140 --> 00:01:01,210
printer filament that we're recycling
but also of printed parts generated from

10
00:01:01,210 --> 00:01:05,830
that filament and it will allow us to test
these specimens on the ground and see

11
00:01:05,830 --> 00:01:11,380
the recycle the effects of recycling
this plastic not just once but multiple

12
00:01:11,380 --> 00:01:16,810
times so it's not just about breaking
down and using the things that we have

13
00:01:16,810 --> 00:01:20,320
on station available to us but being
able to do it over and over again to

14
00:01:20,320 --> 00:01:25,660
create a more sustainable in space
economy so right now on the Cygnus we're

15
00:01:25,660 --> 00:01:31,780
culturing and growing human primary
muscle cells in these small chips and we

16
00:01:31,780 --> 00:01:36,820
have two chips in our payload there are
four chambers on each so we have eight

17
00:01:36,820 --> 00:01:41,500
separate experiments the really unique
thing about our payload is that it is

18
00:01:41,500 --> 00:01:46,960
all contained in a 30 by 10 centimeter
box so it's a miniaturized lab and

19
00:01:46,960 --> 00:01:50,140
there's really no astronaut intervention
needed except to put it in the freezer

20
00:01:50,140 --> 00:01:54,820
at the end this really sets the stage
for tissue chip organ on a chip studies

21
00:01:54,820 --> 00:01:58,680
that are coming on future flights this
is a new capability

22
00:01:58,680 --> 00:02:05,310
on the ISS and we're just really excited for
the great launch 501c3 nonprofit that

23
00:02:05,310 --> 00:02:09,030
uses spaceflight as a way to get
students more engaged in science

24
00:02:09,030 --> 00:02:12,870
technology engineering and math we hold
a program called go for launch where for

25
00:02:12,870 --> 00:02:16,770
multiple days students in grades 8
through 12 can compete to have their

26
00:02:16,770 --> 00:02:20,430
science ideas flown to the International
Space Station

27
00:02:20,430 --> 00:02:24,510
our investigation concerns the effects
of microgravity and low Earth orbit

28
00:02:24,510 --> 00:02:28,710
conditions on the basic principles of
self-healing polymers and well

29
00:02:28,710 --> 00:02:32,520
specifically a self-healing concrete the
concrete in our experiment functions

30
00:02:32,520 --> 00:02:36,570
using spore-related bacterial colonies
and a chemical healing solution the

31
00:02:36,570 --> 00:02:40,500
self-healing properties of these
concrete's make it such that less time

32
00:02:40,500 --> 00:02:46,230
is necessary in order to repair
structures such as micro fractures and

33
00:02:46,230 --> 00:02:50,340
other small damages we hope that our
experiment is able to shed some light on

34
00:02:50,340 --> 00:02:54,959
the nuances of self-healing materials in
microgravity and it spurs the