
PAO

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00:00:02,390 --> 00:00:04,810
>> Dan Hout: Joining me here
on console, Kirt Costello.

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00:00:04,810 --> 00:00:08,070
He's one of our Assistant
ISS Program Scientists

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00:00:08,070 --> 00:00:09,500
for national research.

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00:00:09,500 --> 00:00:12,170
Kirt has a tremendous
amount of insight

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00:00:12,170 --> 00:00:13,970
in all the science
going on onboard.

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00:00:13,970 --> 00:00:15,600
So first off, Kirt,
tell us a little bit

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00:00:15,600 --> 00:00:16,820
about what your position is.

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00:00:16,820 --> 00:00:19,330
How are you supporting the
International Space Station.

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00:00:19,330 --> 00:00:20,490
>> Kirt Costello: Sure, Dan.

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00:00:20,490 --> 00:00:23,570
Thanks. We work to advise
the ISS Program Manager

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00:00:23,570 --> 00:00:28,010
on the science that's being

selected and flown to the ISS.

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00:00:28,010 --> 00:00:31,010
We also handle the integration
of priorities for all

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00:00:31,010 --> 00:00:34,060
of our different sponsors,
whether that's science coming

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00:00:34,060 --> 00:00:37,780
from NASA or CSIS,
our new Center

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00:00:37,780 --> 00:00:39,960
For Advancement of
Science In Space.

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00:00:39,960 --> 00:00:40,190
>> Dan Hout: Okay.

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00:00:40,190 --> 00:00:42,290
And let's dive right
into the science.

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00:00:42,290 --> 00:00:45,490
I mean, just -- just today
onboard we have astronauts

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00:00:45,490 --> 00:00:47,970
lighting things on fire
for the BASS experiment.

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00:00:47,970 --> 00:00:51,150
We have the advance
colloids thing going on.

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00:00:51,150 --> 00:00:53,980
Tell us a little bit about all
the multi-disciplinary stuff

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00:00:53,980 --> 00:00:55,570
taking place onboard
the station.

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00:00:55,570 --> 00:00:56,260
>> Kirt Costello: That's right.

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00:00:56,260 --> 00:00:57,490
And -- and I'm glad
you brought that up

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00:00:57,490 --> 00:00:59,090
because it's a great point.

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00:00:59,090 --> 00:01:00,800
In -- in very few places

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00:01:00,800 --> 00:01:04,430
on Earth do you have a
biology lab sitting right next

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00:01:04,430 --> 00:01:07,430
to a combustion furnace,
sitting right next

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00:01:07,430 --> 00:01:09,700
to an Earth observation window.

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00:01:09,700 --> 00:01:11,440
We've got so many
different types

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00:01:11,440 --> 00:01:14,240
of science going onboard the ISS

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00:01:14,240 --> 00:01:17,140
that it really is a unique
opportunity to be able

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00:01:17,140 --> 00:01:20,140
to combine those and
think of not only research

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00:01:20,140 --> 00:01:21,850
in one particular field,

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00:01:21,850 --> 00:01:24,450
but also multi-disciplinary
research.

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00:01:24,450 --> 00:01:29,370
So like you pointed out, we've
got combustion going on today.

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00:01:29,370 --> 00:01:30,630
Well, one of the things that --

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00:01:30,630 --> 00:01:33,970
that comes up is how are we
going to utilize our resources

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00:01:33,970 --> 00:01:40,940
in space, how are we going to
utilize our own fuels and foods.

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00:01:40,940 --> 00:01:42,640
Interesting crossovers
can happen

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00:01:42,640 --> 00:01:45,040
when you start considering
what we can do

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00:01:45,040 --> 00:01:49,010
with biological experiments in
growing plants, for instance,

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00:01:49,010 --> 00:01:52,600
onboard; and then actually
processing those plants

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00:01:52,600 --> 00:01:54,650
for both food and fuel.

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00:01:54,650 --> 00:01:57,640
In the future that may be a
capability that we look into,

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00:01:57,640 --> 00:01:58,960
and it's enabled by the fact

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00:01:58,960 --> 00:02:01,570
that we have multi-disciplinary
facilities onboard the

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00:02:01,570 --> 00:02:02,560
Space Station.

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00:02:02,560 --> 00:02:05,630
Okay. And you had mentioned
that crossovers can happen.

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00:02:05,630 --> 00:02:08,620
And I know you had written a
blog post recently that was

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00:02:08,620 --> 00:02:10,660
on nasa.gov where you
talked about how it's kind

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00:02:10,660 --> 00:02:13,100
of a melting pot and
they can come together

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00:02:13,100 --> 00:02:16,320
to accomplish the same
goals a lot of times.

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00:02:16,320 --> 00:02:18,710
Can you talk about some of the
experiments that almost kind

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00:02:18,710 --> 00:02:21,850
of use the same equipment end
up working in conjunction?

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00:02:21,850 --> 00:02:22,540
>> Kirt Costello: Sure.

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00:02:22,540 --> 00:02:26,400
One of the experiments that
we have onboard is Earth Camp,

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00:02:26,400 --> 00:02:27,770
and that's an experiment

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00:02:27,770 --> 00:02:32,090
where high school students
actually take Earth observation

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00:02:32,090 --> 00:02:34,600
photos of the Earth through
an automated camera system.

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00:02:34,600 --> 00:02:36,580
But we also have
another experiment

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00:02:36,580 --> 00:02:40,390
in a completely different field
of physics, fluid physics,

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00:02:40,390 --> 00:02:44,360
the BCAT experiment, so
Binary Colloid Experiment.

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00:02:44,360 --> 00:02:46,460
That's a fluid physics
experiment;

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00:02:46,460 --> 00:02:47,950
and you wouldn't think
it has much to do

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00:02:47,950 --> 00:02:49,710
with Earth observation,
but we --

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00:02:49,710 --> 00:02:54,290
what we found out is that by
using the Earth Camp cameras,

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00:02:54,290 --> 00:02:58,110
which can be automated and
programmed to take pictures

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00:02:58,110 --> 00:03:01,470
in sequences over time, we
were able to cut out a lot

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00:03:01,470 --> 00:03:05,840
of the crew time involved in
the very manual BCAT procedures,

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00:03:05,840 --> 00:03:07,680
the original procedures.

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00:03:07,680 --> 00:03:10,350
So by combining those
two experiments,

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00:03:10,350 --> 00:03:13,250
taking the Earth Camp camera
and using it for BCAT,

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00:03:13,250 --> 00:03:15,800

we're able to accomplish a
lot more of the objectives

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00:03:15,800 --> 00:03:20,980
of the BCAT investigation just
through using that synthesis

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00:03:20,980 --> 00:03:23,240
of Earth observation
technologies

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00:03:23,240 --> 00:03:26,760
and the -- the BCAT experiment.

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00:03:26,760 --> 00:03:29,020
>> Dan Hout: And you kind of
mentioned, you guys just kind

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00:03:29,020 --> 00:03:30,700
of found that out as
you were going along.

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00:03:30,700 --> 00:03:33,470
Have there been any instances
where maybe people on the ground

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00:03:33,470 --> 00:03:36,000
or the astronauts up in space
were working with an experiment

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00:03:36,000 --> 00:03:38,150
and they just kind of go, hey,
why don't we do it this way;

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00:03:38,150 --> 00:03:40,480
and something totally
new comes out of it?

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00:03:40,480 --> 00:03:41,530
>> Kirt Costello: That's

-- that's a great point.

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00:03:41,530 --> 00:03:44,440
There is not only the various
disciplines that we have

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00:03:44,440 --> 00:03:47,090
on the Space Station,
we have the experience

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00:03:47,090 --> 00:03:49,920
of our crew members,
which are greatly coveted,

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00:03:49,920 --> 00:03:51,750
I think, by everyone here.

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00:03:51,750 --> 00:03:53,910
And they come with
different backgrounds;

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00:03:53,910 --> 00:03:56,030
so not all of them have
the same background.

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00:03:56,030 --> 00:03:57,670
One might have a
biology background.

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00:03:57,670 --> 00:03:59,860
One might have a
physics background.

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00:03:59,860 --> 00:04:02,300
Well, when it comes to BCAT,

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00:04:02,300 --> 00:04:04,410
one of the things Don
Pettit did while --

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00:04:04,410 --> 00:04:09,170
while he was up there is he was
having difficulty finding the

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00:04:09,170 --> 00:04:12,020
colloid clumps in
that BCAT experiment.

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00:04:12,020 --> 00:04:15,170
And so in conjunction
with working with the PI

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00:04:15,170 --> 00:04:18,460
on the ground, he was
able to set up a system

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00:04:18,460 --> 00:04:22,060
because he had some training
in engineering and optics,

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00:04:22,060 --> 00:04:27,220
to actually use a scattering
phenomena to find the edges

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00:04:27,220 --> 00:04:28,950
of those, to know when
they were in the field

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00:04:28,950 --> 00:04:29,990
of view of the camera.

103
00:04:29,990 --> 00:04:32,900
And again, that assisted
us in get the data back

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00:04:32,900 --> 00:04:35,170
down to the investigator
on the ground.

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00:04:35,170 --> 00:04:35,600
>> Dan Hout: Okay.

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00:04:35,600 --> 00:04:38,640
And we got a lot of really cool
things taking place onboard the

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00:04:38,640 --> 00:04:41,160
Station right now; and
everything's really starting

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00:04:41,160 --> 00:04:43,810
to ramp up, everything's really
starting to go full speed.

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00:04:43,810 --> 00:04:45,860
What are some of the really
cool things that, you know,

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00:04:45,860 --> 00:04:47,980
might be coming up
in the future soon?

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00:04:47,980 --> 00:04:49,650
>> Kirt Costello: Well,
we mentioned plant growth.

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00:04:49,650 --> 00:04:52,420
Right now to date
we've had the option

113
00:04:52,420 --> 00:04:57,030
to grow pretty small plants
in our investigations onboard,

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00:04:57,030 --> 00:04:59,610
either the Seedling
Growth Experiment --

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00:04:59,610 --> 00:05:03,320

you might be familiar with
-- grows very small shoots

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00:05:03,320 --> 00:05:07,700
and seedlings; but in
the future we're looking

117
00:05:07,700 --> 00:05:10,400
at having a much
larger plant capability.

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00:05:10,400 --> 00:05:13,680
There is a -- an investigation
coming up called "Veggie,"

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00:05:13,680 --> 00:05:16,440
which will be growing
larger plants.

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00:05:16,440 --> 00:05:20,520
And we're working right now on
a large plant growth habitat,

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00:05:20,520 --> 00:05:23,510
which -- or an advanced
plant habitat,

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00:05:23,510 --> 00:05:24,950
which will give us
the capability

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00:05:24,950 --> 00:05:28,600
to grow even larger species,
to do some of that assessment

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00:05:28,600 --> 00:05:32,600
on what the effects
of growing food crops

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00:05:32,600 --> 00:05:34,980

and larger crops in orbit are.

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00:05:34,980 --> 00:05:37,120
>> Dan Hout: So a lot of really
cool experiments coming up,

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00:05:37,120 --> 00:05:39,170
a lot of really cool stuff
taking place right now.

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00:05:39,170 --> 00:05:41,740
Kirt, thanks so much for
coming on with me real quick,

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00:05:41,740 --> 00:05:43,410
giving us a lot of
really great insight

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00:05:43,410 --> 00:05:46,470
into the science taking
place onboard Station.

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00:05:46,470 --> 00:05:49,980
If you guys ever want to check
out more about Station science,

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00:05:49,980 --> 00:05:51,520
you can always check
it out on our website

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00:05:51,520 --> 00:05:54,920
at www.nasa.gov slash station.

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00:05:54,920 --> 00:05:55,650
Kirt, thanks.