NASA will help you make its mark on the
International Space Station this week
when space shuttle Atlantis carries the
Columbus laboratory into orbit the
Columbus lab was named after a great
Explorer and is designed to sail through
the ocean of space as a crucial part of
the space station it will host teams of
astronauts hoping to unlock new
discoveries the module from the European
Space Agency will ride into orbit aboard
space shuttle Atlantis to take its place
on a cutting edge of space science
Atlantis is also carrying a crew of
veteran astronauts and first-time Flyers

who will attach Columbus and then

activate the laboratory in order well to

this point we spent a lot of time

building the infrastructure of the space

so we're really looking forward

to getting some of the laboratory

modules and other facilities that will

actually be able to use the space

station for research and the Columbus is

a big part of that it is another

critical mission for NASA and its

international partners as a set the

stage for years of intense research in
microgravity so yeah no pressure a lot

of folks are going to be watching it and

it's very important that we do it right

live from Kennedy Space Center this is

the STS 122 astronaut webcast welcome

and thanks for joining us today as we

take a backstage tour of the 24th space

shuttle mission to the international

space station STS 122 I'm your host

Allard Beutel news chief here at NASA's

Kennedy Space Center where space shuttle

Atlantis is going through some final

preparations before liftoff on today's

we're going to take an in-depth
look at the mission and the work that
awaits the Atlantis seven crew members
will also be joined by a special guest
dr. Roberts a chore who will be sharing
some of his perspectives on preparing
for a mission to the station he also
takes some of your questions that you've
emailed through NASA gov website that's
all coming up but first let's focus on
the main purpose of the STS 122 mission
the addition of the Columbus research
laboratory sets the stage for major
boost in science on the station here's a
closer look at the European Space
Agency's largest contribution to the
space station the Columbus laboratory is

Europe's first crewed spacecraft and it

will be the second module designed for

research duties to reach the

International Space Station NASA's own

science segment called destiny has been

in orbit since 2001 a third from the

Japanese space agency is due to reach

space early in 2008 Columbus began its

life in Turin Italy as a 23 foot long

15-foot wide cylinder enhanced with

micrometeoroid shields and other

structures so it could survive in space

it was taken to Bremen Germany to
extensively outfit its interior to host

10 phonebooth sized racks that will make up the modules research ability for of the racks are designed for specific experiments into micro gravity fields including human reactions to space and studies into how fluids and crystals grow and behave

a fifth rack designed to store specialized equipment is also packed on board Columbus for launch the racks and experiments will be activated shortly after Columbus is attached to the space station space walkers will also connect
a pair of experiments to the outside of
the module that will take advantage of
the vacuum of space the experiment racks
and other gear were loaded into the
Columbus module at NASA's Kennedy Space Center in Florida the module itself was flown aboard a modified transport plane
to Kennedy in 2006 to go through an intense schedule of preparations before
launch into space since arriving
Columbus has been put through extensive
testing including being lowered into a vacuum chamber to make sure its air will not leak into space a team of European
Space agency officials and European contractors were joined by NASA and contractors to prepare the module for launch. It was moved to the launch pad in early November and is now carefully cocooned inside Atlantis for its launch. And now we're pleased to welcome our guest astronaut Dr. Bobby Sachar to the show. Bobby thanks for joining us. They said you coming down here for the launch. It's good show tomorrow. Um you've obviously led a very accomplished career. You've been a book your medical doctor or researcher surgeon. You're an astronaut again. You thinking that you needed to pad your
resumes and an overachiever and why why

astronaut it's just something I wanted

to do ever since I was a little kid you

know I looked up like every other little

kid at the night sky and said well it

would be great to you know actually go

there and be able to participate in

exploring space so back in 2004 they're

looking for another class I you know

applied back then and was lucky enough

to be selected and spent a great

adventure ever since we're lucky to have

you on board in the astronaut corps but

medical school and now astronaut
training I'm not going to ask you to to

compare the two because it's really not

fair to say which one's harder but how

do they compare the training that you've

had for both yeah they have some

similarities but there

differences which does make it a little

bit like comparing apples and oranges

but i think the similarities are

enlightening i mean it it takes really

almost two years to get through the

basic curriculum to become an astronaut

medical school of course is for years

but really it medical schools two years
of studying and then you know two years

of practical stuff and I think it really

helped a lot in terms of allowing me to

prepare to be able to assimilate a large

amount of material in an intense

environment and that's really what the

astronaut training program is you got a

very diverse and large volume of

material that you have to learn you have

to learn about all the different systems

the space station the space shuttle we

also fly jet trainers called the T-38

and you have to be proficient with that

you have to learn about scuba diving so

...
that you can do all the EV a training

00:06:31,970 --> 00:06:37,370
and you got to do all of that and you do

00:06:34,910 --> 00:06:39,320
a lot of classroom learning too so it's

00:06:37,370 --> 00:06:43,180
physically demanding mentally demanding

00:06:39,319 --> 00:06:45,920
and you know very challenging but it

00:06:43,180 --> 00:06:48,170
prepares you very well for when you're

00:06:45,920 --> 00:06:49,910
going to actually go and fly in outer

00:06:48,170 --> 00:06:51,770
space so that you feel comfortable doing

00:06:49,910 --> 00:06:53,180
it well you've done research on the

00:06:51,769 --> 00:06:55,009
skeletal system and it's one of them

00:06:53,180 --> 00:06:56,449
your research areas that's obviously

00:06:55,009 --> 00:06:58,519
what are the areas that NASA looks at

00:06:56,449 --> 00:07:00,860
for long-duration spaceflights you have

00:06:58,519 --> 00:07:03,169
to overcome these spaces hard on people

00:07:00,860 --> 00:07:04,129
it's not a friendly environment for for
us to be there but if we're going to go out to back to the moon and on to Mars and for long periods of time we need to have that kind of research how does a how does your background help us prepare for that help Nancy get ready for that yeah I you know in my former career I did do a lot of research on musculoskeletal system NASA of course has a very specific interest in knowing what happens to the body when you go into outer space funny thing is is that we do adapt so there are some programming within us or whatever that
makes it possible for us to adapt to being in a low-gravity environment

it so that's interesting in itself just to think about and you know specifically what you have to do when you're in other spaces you have to do resisted exercises so that you preserve the mass of your skeleton and your muscular mass and you know on a long-duration mission like going to Mars we also right now are trying to prepare for the contingency that a crewmate crew member may get sick or something like that it might not be able to work out as vigorously so you
know of course there are other measures

that are possible to preserve the

skeleton pharmacological interventions

and this is really the main area I think

of the physiol physiology research going

on right now so one of the things that

we often talked about being a surgeon

have to have good hands for the same

thing on the NASA side that with

spacewalkers you have to have good hands

and be able to do all the all the

construction we're doing up there and

any kind of work science we're going to

do up in the on the moon and on Mars how

and
did you compare well I think we have the

example of some previous doctors who

have you know flown and got aboard the

space station that we can reference like

dr. Perez esky he's not a surgeon he's

emergency room doctor but nonetheless

you know his remarks were that you know

the space station was a very special

patient and of course he did a wonderful

job repairing the solar array so I think

there is a precedent that says the

doctors can make pretty decent

astronauts too well I nothing to making

a pitch for your next flight but yeah

that's a and it's good experience and
actually most of the space station admissions do require multiple spacewalks and and they also include hardware up to make maintenance and in this particular case with the STS 122 mission three spacewalks are planned and possibly a fourth along with a lot of robotics work which you've got experience and let's listen to what some of the STS 122 crew members had to say as they prepare for their mission aboard the International Space Station the crew of STS-122 is led by a veteran astronaut
commander Steven Frick he flew aboard Atlantis as a pilot during the STS 110 mission which attached the central section of the power trust to the outside of the International Space Station with Atlantis taking another key component into orbit Frick says the commanding role means he must have broad knowledge of every crew member's work. I wouldn't say was learning anything specific, it was more kind of expanding the scope from my first mission where I was the pilot I had very defined duties and so you can really dig your teeth.
into learning all the systems in the

orbiter and so being the commander

having to learn a lot more about

spacewalks and in the details of the

Columbus module itself and what the goals are with that laboratory module

where the challenges I think astronauts will make several spacewalks during STS 122 to connect Columbus and outfitted for work Stan love will be one of the spacewalkers my job on the spacewalk will be to ride on a special toe clip on the end of the station's robotic arm and from that position I will be carrying
two large science instruments out of the
shuttles payload Bay and mounting them
on to the outside of the Columbus module
which we will have just added to the
space station love will also operate the
space station's robot arm during other
spacewalks it's a different perspective
for tasks that are already difficult to
master I there's no similarity there are
totally different things and in fact
that is one of the difficult parts of it
since I'm I have both roles on the
flight and often the two are at odds for
each other so it's kind of a challenge
remembering which hat I'm supposed to be
wearing at which time astronaut leland

melvin also making his first space

shuttle flight will drive the shuttles

50-foot long robot arm to maneuver

spacewalkers around the outside of the

station and columbus by the time he does

it in space he will have practice the

precise work for hours on end in

simulators when we get up to space to do

the installation it should be second

nature to discuss moving melvin also

talked about the excitement of getting

assigned to his first mission well when

i first got the call the call was on my
cell phone and I was actually at home

at the time and I just got out the

shower and I was you know hung the phone

up and started jumping around

celebrating and I have a dog Jake is my

dog and he was looking like I was crazy

like what's going on here was a very

good day very exciting day love who also

worked in astronomy before joining

NASA's astronaut corps said he does not

expect to have much time to look at the

sky during the shuttle mission and

honestly I'm not going to do much

astronomy from the shuttle our
opportunities to look out the window are very limited back in the day when the shuttle would launch up and pop out a satellite and then hang out for a couple days and come home they have time to look out the window photograph the earth and things I am hoping I can find enough time to look out and I suppose the thing I'll be most interested in seeing is the planet Earth because it's big and close and you can see stuff the astronauts know they could return to the space station in the future for a much longer stay as an expedition crew member yeah i
think you know getting a exposure to

space on a you know 11 12 de mission is

great i would jump at the chance to go

for a six-month stay how they sound like

they're ready to fly Bobby several

people of submitted questions so through

NASA gov and before you answer a few I

do have one of my own indulge myself

it's been known the astronauts for since

the beginning of the Mercury program for

decades have been taking personal items

up with them mementos things that help

them make the transition from from earth

to space when you take your flight not

to put you on the spot and not to make
343
00:13:41,120 --> 00:13:44,509
it too personal but what are some of the

344
00:13:43,370 --> 00:13:47,299
things you're thinking about taking up

345
00:13:44,509 --> 00:13:49,220
with you that's the first time anybody's

346
00:13:47,299 --> 00:13:53,328
asked me to have let their happy the

347
00:13:49,220 --> 00:13:55,370
last well people answer it I think you

348
00:13:53,328 --> 00:13:58,458
know I'll probably take some pictures of

349
00:13:55,370 --> 00:14:02,269
family members and take some sort of you

350
00:13:58,458 --> 00:14:03,019
know device so allow me to be music that

351
00:14:02,269 --> 00:14:05,149
I want to hear

352
00:14:03,019 --> 00:14:07,250
and then you know probably there'll be

353
00:14:05,149 --> 00:14:09,319
some other suggestions from people in

354
00:14:07,250 --> 00:14:11,330
terms of memorabilia I'm sure there'll

355
00:14:09,320 --> 00:14:12,530
be no shortage of that thank you you'll

356
00:14:11,330 --> 00:14:14,900
have friends and family will help you
with that anything so all right we'll get to the questions that people submitted bill from Buffalo New York asks well it's a good question what type of science will be done on Columbus it makes it different than the science we're currently doing on the space station that's a good question the you know our ability to do scientific experiments is is actually limited right now because the only platform we have for it is the u.s. lab and you know us lab is actually smaller than it was originally planned to be so the Columbus
module greatly expands our ability to do experimentation there's a whole host of experiments that are sort of backlogged that we want to do and so this is going to be a wonderful addition to the space station and allow us to get to some of these additional experiments there are sort of four main categories at the Columbus as a capacity for the first category is biomedical experiments on human physiology then we also have the capacity to do microscopic experiments on bacteria and you know viruses and microorganisms there's a
another pallet which primarily is for experimenting on fluids so looking at the behavior of fluids in microgravity and then finally there's some pallets that we're go outside of the Columbus module that are attached to it which allow us to evaluate the behavior of materials in outer space now the Columbus module is the European Space Agency's largest contribution to the space station now 2008 really is a year for NASA for its international partners really dedicated to various laboratories and in our and our other partners which leads to the next
question from Nate from Grand Rapids asks what kind of language training to the astronauts go through the perform their missions to the space station considering Russia and Japan pay pivotal roles to all NASA astronauts know how to speak Russian well or Japanese or do they have a translator on board on at all times well the the main language that most other astronauts know how to speak is Russian we actually have a language center and there's a dedicated faculty of people that teach us different languages so you can learn
any language that you actually want to I

think Russian has been the most

important language because of the

relationship between you know NASA and

the Russian space agency in building the

International Space Station but there

are astronauts who also know how to

speak Japanese French German etc I've

just started my training and Russian and

I hope one day to be fluent in and I'm

not there yet got a ways to go so

there's a lot better than I'm doing I

Tatiana age 10 from Los Angeles asked us

as a historical question for us who

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developed the first space shuttle when
what has been the space shuttles effect
on history that's a good question you
know nASA has developed and flown the
space shuttle started flying back in the
early 80s and we expect that it's going
to fly through 2010 when we complete the
space station maybe they'll even fly
beyond that but you know we certainly we
don't have a mandate for that yet but
the space shuttle has made it possible
to build the space station and of course
these are all sort of baby steps that we
have to take to be able to explore the
the solar system first and then go

00:17:54,480 --> 00:17:59,610
beyond it I think you know the next

00:17:57,869 --> 00:18:02,789
thing that will be doing is actually

00:17:59,609 --> 00:18:04,529
building a colony on the moon and we'll

00:18:02,789 --> 00:18:08,190
use what we learned from building the

00:18:04,529 --> 00:18:11,009
space station to facilitate that of

00:18:08,190 --> 00:18:12,870
course this all goes back again to the

00:18:11,009 --> 00:18:16,410
space shuttle which was really the

00:18:12,869 --> 00:18:19,349
beginning of it all so a very important

00:18:16,410 --> 00:18:21,029
program that's existed for us well that

00:18:19,349 --> 00:18:22,230
actually leads me to the our final

00:18:21,029 --> 00:18:24,869
question Eddie from Belfast Ireland

00:18:22,230 --> 00:18:26,039
talks about we just went from the end of

00:18:24,869 --> 00:18:27,569
the the beginning of the shuttle program

00:18:26,039 --> 00:18:29,159
and he asks a question about the end of
the shuttle program when is the current

time for the current

fleet planning to be retired

kind of alluded to that and what's

taking his place well the next space

vehicle is the Orion and that's what

we're going to use to continue our trips

to the space station and to go on to the

moon so that should be in service

sometime in the next you know seven to

eight years right now I think the

projections are for around 2013 or so

so you know we're all looking forward to

that I certainly hope to be able to fly

on that vehicle also and we're we're
00:19:03,440 --> 00:19:07,308
definitely looking forward to going back
to the moon I the last part of his
question was is it being tested now in
secret and now I'll Eddie I'll take the
hit on that obviously I'm not doing my
job promoting it enough so I'll let you
know if you want to find out more
information about the Orion spacecraft
you go to www.nasa.gov/exploration

00:19:20,779 --> 00:19:25,610
well again was our last question thank
you for joining us we appreciate you
coming here and answering our viewers
questions of course we want to thank all
of our web viewers for submitting those
questions in the first place remember to

tune to NASA's home on the internet was

a CEO / shuttle throughout the STS 122

mission to find out the latest updates

I’m a love you tell thanks for watching