

Space Life Sciences

Erin Lindsey

> Hi All. I'd like to introduce Erin Lindsey with NASA who will be discussing and answering questions about Space Life Sciences.

<emmett peters> hello erin

<Sheryl> Hello Erin

<Erin-NASA> hey everyone!

<Michael Both> hello

<Sheryl> and randy

<Josh Abramovitch> Hello.

> Hello

<Erin-NASA> I'm going to apologize right now for grammatical/English errors! :)

<emmett peters> so erin... do you have anything specific youd like to talk about before we start barraging you with questions?

<Erin-NASA> hmmm, not specifically....go ahead and start shooting!

<emmett peters> so what do you do at NASA?

<Erin-NASA> I work in the Extravehicular Activities (EVA) Physiology, Systems and Performance group in Space and Life Sciences

<Erin-NASA> I'm helping create a better space suit

<Ryan Ash> So are you technically a doctor?

<emmett peters> aw sthats cool

<Erin-NASA> one that's more comfortable, efficient, etc.

<Sheryl> do you get to study biology alot, or it more of a technical aspect?

<Erin-NASA> haha, no I'm definitely not a doctor! i wish

<Erin-NASA> well my major is computer physics and i have minors in exercise science and math

<Erin-NASA> so i've studied quite a bit of human anatomy and physiology but i've also gotten a lot of technical work also

<Sheryl> computer physics....is that different than normal physics?

<Erin-NASA> not really. it's a physics degree and a computer sequence, so I've just taken a few more classes that stress computer programming

<Erin-NASA> but i'm still a physicist

<Erin-NASA> and i go to Illinois State University in Normal, IL if anyone is wondering

<Josh Abramovitch> So what does your job entail?

<Erin-NASA> I'm a senior with 7 credit hours left to graduate

<Sheryl> your close then :)

<Erin-NASA> very close!

<Erin-NASA> my job entails quite a bit of desk work right now, reading a lot of literature about simulated reduced gravity testing, helping test astronauts on the C9 aircraft, the partial gravity simulator

<Erin-NASA> i've gotten to see and help with a lot of neat things

<Ryan Ash> How exactly do you optimize human health?

<Erin-NASA> wow, that's a big question...can you be a bit more specific? do you mean how do you optimize astronaut's health in space or just the general population here on earth?

<Ryan Ash> Astronaut's health please :) Sorry for the misunderstanding

<Erin-NASA> no problem...

<Erin-NASA> well, astronauts have to go through very extensive physicals on EVERY part of their body (inside and out) to make sure they don't have any major health issues that could be a problem in space

<Erin-NASA> once they've become an astronaut, they do quite a bit of physical training on the exercise equipment that is on the ISS so that they become familiar with it

<Erin-NASA> there are people they work with at NASA called the ASCRs (Astronaut Strength Conditioning and Rehabilitation) that are basically really really good personal trainers that understand the effects of space

flight on the human body

<Nathan Carey> and tell them how to work out?

<Erin-NASA> when they return from space, there is extensive physical therapy to do in order to minimize the effects of space flight, like muscular atrophy, bone mineral density loss, etc

<Ryan Ash> of course

<Sheryl> i don't know how to phrase my question where it sounds right....what ways do NASA use to counter the atrophy while in space?

<Sheryl> i know there's exercising

<Sheryl> but is there anything else?

<Erin-NASA> sort of...in general the astronaut population is pretty fit, so they don't need someone to tell them HOW to work out, but they do need an expert to help them best counteract the effects of spaceflight, and to

show them how to use the equipment most efficiently

<Nathan Carey> sure

<Erin-NASA> that's pretty much it as far as i know

<Erin-NASA> they do both cardio and resistance training

<Erin-NASA> there's probably more that I'm unaware however

<Taylor Love> do you by chance know how much would a trip to mars impact the human body?

<Erin-NASA> there are a lot of studies being done on that subject. probably some of the effects that there are from a lunar mission would be the same as a mars mission, but there would be others as well.

<emmett peters> just over a longer period of time i assume

<Taylor Love> yes of course

<Erin-NASA> martian gravity is $\frac{3}{8}$ (I think) and lunar gravity is $\frac{1}{6}$, so my guess is that initially there wouldn't be as much muscular atrophy, but people would also be gone a lot longer for a mars mission, which is a big

concern

<Nathan Carey> There's nothing they can change in their diet that helps prevent atrophy?

<Taylor Love> yeah that makes sense

<Erin-NASA> probably...protein is the building block for muscles, but you have to use and store that protein in the correct way

<Erin-NASA> the best prevention of atrophy though is exercise, and adequate exercise in space is difficult to attain

<Erin-NASA> so do any of you know where you'll be going to college? studying?

<Josh Abramovitch> I'm not sure where I'm going yet, but I'm looking to study nuclear engineering and business.

<Sheryl> i really want to go to MIT or Berkely.....however i don't know if it's going to happen

<Ryan Ash> Rice University (HOPEING) Bio medical

<Nathan Carey> Aero & Astro Engineering at the Air Force Academy

<Taylor Love> i'm going to attend either texas state or A&M and major in math be a math teacher

<Erin-NASA> gig 'em!

<Erin-NASA> haha, you guys sound like you have some awesome plans!!!

<Michael Both> I want to go to UT for Mechanical Engineering

<Taylor Love> haha

<Taylor Love> that sounds pretty cool

<Erin-NASA> engineering is a great field of study to get into NASA...but actually all of ya'lls fields would be good!

<Sheryl> did you always want tow ork with NASA, or was that just where life took you?

<Sheryl> *to work

<Erin-NASA> i've wanted to be an astronaut since 5th grade...though i was never really a space buff (i've played sports my whole life and that's where most of my focus was besides school)

<Erin-NASA> but now that I'm at NASA, I actually realized that I don't want to be an astronaut anymore

<Taylor Love> why not?

<Sheryl> do you want to stay with NASA though?

<Erin-NASA> they work A LOT and I really want to be a stay-at-home mom eventually and be able to devote all of my time to that

<Erin-NASA> working for NASA would be awesome before I have a family!

<Taylor Love> yeah i would assume an astronaut would have to give up a lot of free time

<Nathan Carey> oh yeah!

<Erin-NASA> it is such an amazing environment at Johnson Space Center...the people are incredible to work with

<Taylor Love> I think being an astronaut would be very interesting

<Sheryl> i think it would be cool to be around such....intelligent people on a daily basis

<Sheryl> i bet you've learned a ton

<Erin-NASA> yes, it would be so interesting and really neat, but it's also a very big time committment

<Erin-NASA> i have learned so much! the people are very intelligent but they are also very down to earth

<Erin-NASA> no one acts like a genius even though they are! :)

<emmett peters> sounds like a good learning environment

<Erin-NASA> absolutely

<Taylor Love> oh yeah!

<emmett peters> wow this sound =awesome

<Erin-NASA> so do all of you have hopes to work for NASA/become an astronaut?

<emmett peters> sorry error

<Taylor Love> i would love to be an astonaut but I think it would also be kind of scary going into space

<Nathan Carey> Yes, astronaut for me

<emmett peters> id like to either be an astronaut or design new planes for lockheed or boeing or something

<Ryan Ash> I would love to be apart of the NASA "family"

<Sheryl> i want to get a degree in biotech w/ a minor in cognetive studies and find new ways to incorporate technology with human minds....so no, lol

<Sheryl> but i think it would be awesome

<Erin-NASA> oh wow, sheryl that's really interesting!

<Taylor Love> yeah it is

<Nathan Carey> yeah, sounds like sci-fie

<Sheryl> ty guys

<Sheryl> i hope it works out

<Ryan Ash> It will

<Nathan Carey> You'll be a big name for it some day...

<Erin-NASA> year in school everyone?

<Nathan Carey> Juniors all

<Sheryl> :)

<Ryan Ash> Juniors

<Sheryl> yeah, we're all juniors

<Taylor Love> junior

<Michael Both> juniors

<Erin-NASA> so what exactly does HAS do?

<Nathan Carey> We work on engineering-type online projects

<Sheryl> we get to spend 10? days at NASA if we're chosen as part of the program

<Ryan Ash> Makes high school students experience nasa

<Nathan Carey> Sheryl, think it's a week

<Sheryl> ah, ok

<Erin-NASA> that is so cool that you guys get to be a part of that!

<Michael Both> we get an online reading lesson, have to take a quiz over it, then write an essay for an assignment

<Nathan Carey> totally!

<emmett peters> i hope

<Taylor Love> and learn very interesting things about Mars (or atleast thats what we are learning about in lesson 8)

<Michael Both> we get 10 assignments

<emmett peters> but im like 200th out of 700 something people

<Michael Both> one due every 2 weeks

<Sheryl> we have to draw too....*shudders*

<emmett peters> hah

<Erin-NASA> so cool...wish I would have had something like that in high school

<Nathan Carey> I know...

<Taylor Love> its very cool

<Sheryl> i've learned so much that i didn't know about

<Erin-NASA> where is everyone from?

<Taylor Love> 700? i thought there was 750?

<emmett peters> it is a very cool experience though

<Ryan Ash> Texas

<Michael Both> Austin

<Taylor Love> I'm from Boerne

<Sheryl> even if we aren't chosen for the program it's an awesome learning experience

<emmett peters> yeah 700 something

<Nathan Carey> well we're all Texans...

<Sheryl> Midland

<Michael Both> 750

<Taylor Love> small town

<emmett peters> ive got a 95 average and im 240th

<Nathan Carey> I'm near Dallas

<emmett peters> thats pretty sweet lol

<Michael Both> 96% - 108

<Taylor Love> i think im like 154? tied with 4 others or something

<emmett peters> haha

<Nathan Carey> whoa, that's a big difference for 1%

<emmett peters> i wonder how other graders grade

<Michael Both> yeah wow

<Taylor Love> 1%?

<emmett peters> i think mine is pretty tough

<Erin-NASA> i'm confused...what is this 750 number that's being thrown around?

<Nathan Carey> number of people in HAS

<Michael Both> 750 people left in the program

<Nathan Carey> this yea

<Sheryl> how many people competing

<emmett peters> thats how many people are in the program

<Michael Both> there were 800 but like 50 dropped out

<Michael Both> or something

<Taylor Love> yeah i think so

<Erin-NASA> ok gotcha and then the top ____ people get to come to NASA for a week?

<Sheryl> does anyone know how many make the summer program?

<Michael Both> 50%

<Taylor Love> top 350

<Nathan Carey> 350

<Sheryl> my anatomy teacher said 400

<Michael Both> er

<Nathan Carey> nope

<Nathan Carey> email

<Michael Both> yeah 350

<Erin-NASA> ok cool

<Sheryl> alright

<Michael Both> they raised their standards

<Nathan Carey> yup!

<Taylor Love> yeah!

<Ryan Ash> Erin what exactly is chronobiology?

<Erin-NASA> so what else do you want to know about NASA, college, life, whatever!

<Ryan Ash> ^^^^

<Erin-NASA> hmmm i have no idea what chronobiology is...sorry!

<Michael Both> are you working on a project now?

<Michael Both> what are you currently doing for NASA?

<Erin-NASA> i don't have my own specific project, but I'm helping my group (EPSP) with a lot of testing, analyzing data/trends, going through literature

<Nathan Carey> and did you say you're at JSC?

<Erin-NASA> yes, JSC

<emmett peters> ive got to go act in a last supper play at my church. thank you so much for your time erin. hope to see you at NASA someday

<Erin-NASA> Texas is great!

<Sheryl> bye Emmett

<Nathan Carey> wow, while you're studying in IL?

<Taylor Love> yes it is!

<Sheryl> good luck with your play

<Erin-NASA> awesome! have fun at your play....God is stinkin' awesome!

<Michael Both> cya

<emmett peters> agreed

<emmett peters> bye everyone

<Taylor Love> byee

<Ryan Ash> Bye

<Erin-NASA> well, I'm sort of taking this semester off (i get 3 credit hours for the internship)

<Nathan Carey> so when do you work for NASA? summertime?

<Erin-NASA> and then I'll go back and do my last semester in the fall

<Nathan Carey> ohh

<Sheryl> wow, that sounds great

<Sheryl> i'd love an internship like that

<Erin-NASA> i played volleyball at ISU so this is the first semester (since my NCAA eligibility is finished) that i haven't had volleyball

<Sheryl> seems like you'd almost learn as much as you do at college =D

<Nathan Carey> aww, too bad!

<Sheryl> is volleyball the only sport you play?

<Erin-NASA> i played basketball for 12 years and other sports growing up, but only volleyball in college

<Taylor Love> thats a long time!

<Nathan Carey> man!!

<Erin-NASA> ya, i love sports!

<Taylor Love> what sports does everyone play?

<Sheryl> i used to play tennis but gave it up for band

<Rick> golf but I am bad

<Erin-NASA> that's part of the reason i love exercise science so much because it juts makes sense to me and i can relate to it easily

<Nathan Carey> I'm in track

<Taylor Love> I'm a cheerleader

<Nathan Carey> cheerleading is gymnastics, not sports... ;)

<Taylor Love> oh know don't go there with me haha

<Nathan Carey> lol

<Taylor Love> no*

<Taylor Love> competitive cheerleading should be considered a sport

<Nathan Carey> hmm

<Sheryl> is exercise science like kinesiology?

<Sheryl> my anatomy teacher is a kinesiologist and he is one of the smartest people i know

<Erin-NASA> yup, its in the kinesiology and recreation department at ISU

<Sheryl> ah, cool

<Sheryl> it seems like it would be an interesting field to study, from what i've heard

<Rick> yes

<Sheryl> is this your first NASA internship?

<Erin-NASA> yes my first

<Sheryl> have you interned anywhere else?

<Michael Both> how long have you worked with NASA?

<Erin-NASA> and i really wanted to come back for the summer so i talked to my group and they wanted me to come back too so i'll have another internship this summer

<Taylor Love> that sounds cool

<Erin-NASA> this is my first internship ever and i started in january so it's been about 3 months

<Sheryl> awesome....maybe we'll see you this summer =D

<Taylor Love> does anyone know what we will be doing at the summer camp if we are chosen?

<Erin-NASA> ya i think i might do a HAS mentorship this summer

<Nathan Carey> sweet!

<Sheryl> that would be awesome!

<Erin-NASA> that would be great to meet you guys!

<Sheryl> i know we are put into teams, and there's some kinda robot competition i think

<Sheryl> or something to that affect

<Taylor Love> that sounds fun

<Nathan Carey> designing parts of a mission to Mars

<Taylor Love> oh wow that sounds even better

<Nathan Carey> a mission proposal, that is!

<Erin-NASA> i'm pretty sure it's a robot design

<Sheryl> don't we get to present to NASA officials over a luncheon?

<Nathan Carey> think so

<Taylor Love> oh okay I see

<Rick> I want to colonize Mars

<Michael Both> yup

<Taylor Love> thats pretty cool

<Nathan Carey> and believe it or not, we'll find out on Wednesday who gets to go

<Sheryl> i know!

<Nathan Carey> er...to the summer program, not to Mars!

<Taylor Love> wensday? i thought it was the 26th

<Rick> really?

<Sheryl> i can't believe it's already that time

<Michael Both> lol

<Taylor Love> haha

<Sheryl> seems like we just started.....

<Taylor Love> yeah i know!

<Michael Both> yeah

<Rick> I hope they get the best kids

<Nathan Carey> well I can't check the HAS site right now, but that's what I have on my calendar

<Sheryl> so that was the last lesson we get to turn in before they choose....i guess it's out of our hands now

<Nathan Carey> haha

<Sheryl> it's the 15th

<Nathan Carey> so foreboding

<Sheryl> whenever that is

<Nathan Carey> Wed.

<Taylor Love> yeah i guess so

<Sheryl> is everyone here in top 350?

<Michael Both> yeah Wed. check the clock on the comp

<Erin-NASA> Nikki Bauer says hello...haha, she works at NASA too, she's a co-op from Georgia Tech

<Taylor Love> yepp

<Michael Both> i know i am

<Sheryl> tell her hi =)

<Taylor Love> I'm in geogia right now!

<Nathan Carey> I'm like 190 sumthin

<Sheryl> it think i'm 220/230 something

<Erin-NASA> do you guys more questions?

<Nathan Carey> you mentioned the C9...is that the vomit comet?

<Erin-NASA> *have

<Taylor Love> Well hopefully some of us will meet eachother this summer

<Erin-NASA> yes it is!!! and i definitely vomitted almost the whole time i was on it!

<Nathan Carey> aw man

<Sheryl> sounds intense

<Nathan Carey> just went one time?

<Erin-NASA> yes one time. i might get to go again this summer

<Erin-NASA> my group was doing testing on astronauts on the C9

<Nathan Carey> very nice

<Nathan Carey> any stories from that?

<Sheryl> do you know what the vomit rate is? =)

<Rick> 10/10

<Nathan Carey> yeah, 2 quarts per minute...;)

<Erin-NASA> well...i sat in the back most of the time unfortunately because i felt sick. but it was a really cool experience to see what it felt like to be in lunar gravity

<Sheryl> that would be amazing

<Sheryl> i've always wondered

<Rick> besides the C9 is there any other way to experience lunar gravity?

<Erin-NASA> the POGO (partial gravity simulator

<Nathan Carey> or the neutral buoyancy lab

<Erin-NASA> that's the other environment that we use...and NEEMO...its off the coast of Key Largo, basically an underwater lab

<Erin-NASA> yup, NBL too

<Nathan Carey> so what's POGO?

<Erin-NASA> it's basically a long arm that attaches to the subject and offloads the subjects mass

<Nathan Carey> wow!

<Rick> .that seems impossible

<Taylor Love> yeah

> Erin, thank you very much for spending time with us and sharing so much info. Randy

<Erin-NASA> No problem! I enjoyed it!

<Sheryl> yes, thank you so much!

<Nathan Carey> Appreciate it!

<Erin-NASA> thanks for chatting guys! hopefully i'll meet some of you this summer

<Ryan Ash> Thank you

<Rick> bye

<Taylor Love> Thanks!

<Ryan Ash> Bye Erin take care

<Taylor Love> Everyone have a good evening!

<Sheryl> Bye Erin, hope to see you this summer!

<Sheryl> you too taylor!

<Michael Both> bye

<Erin-NASA> bye!

<Taylor Love> Thanks! bye

<Sheryl> bye guys