AMSRO
AEROSPACE MEDICINE
STUDENT AND RESIDENT ORGANIZATION

ORBITER NEWSLETTER

May 2019

AMSRO
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STUDENT AND RESIDENT ORGANIZATION

Issue 1, May 2019

A Word from the AMSRO Vice President.

Kseniya Masterova

Dear AMSRO Members,

Thank you everyone for your contributions to AMSRO and a big welcome to our new members! Over the past five years, I have seen the membership grow from about two dozen to over one hundred. Our annual meeting grew from a dozen people in a small room, to a large meeting room with all the seats filled and over a dozen people standing in the back. This kind of growth warrants major changes to our structure and operations. Our executive committee has been working hard to make AMSRO be more accessible to you. Two major votes have recently been passed and I would like to use this opportunity to answer some of your questions and concerns about them.

Previously, only those present at the annual meeting were able to participate in the voting process. In addition, bylaw amendments and voting took up the majority of our time together at the annual meeting. Such limitations have prompted the implementation of online voting. The goal is to allow our members to participate and have a voice regardless of their ability to make it to the annual conference. This change has facilitated us to have a guest speaker at our annual meeting and also allows on-line elections for the largest group of candidates running for office in our history!

Of the 53 members who voted on this change, while 2 opposed. One concern that was brought up was the opportunity to discuss bylaw changes in person. We believe that the benefits of sacrificing this discussion time outweigh the cost. Discussions can be moved to an online forum and amendments can be proposed via email. We also keep track of active members and maintain privacy and integrity of online elections. This improves our in-person-voting system in which we had no way to keep track of who was actually a member. The officers will have access to results only after the voting is complete.

We also introduced the Resident in Aerospace Medicine Representative officer position. This was passed with 38 in favor to 3 against. We believe that this position will help encourage participation in our leadership from those further along in the career path. This position will not only encourage involvement and input from our senior members, but also increase mentorship activity.

Finally, the executive committee will be meeting on Sunday May 5th, 2019 to “revamp” our bylaws. The majority of our bylaws have not changed since this organization was created many years ago, when it contained only a handful of members. It no longer accurately fulfills the needs of our increased membership. The product of this workshop will be a clearer, and more sufficient document that will better serve the needs of this organization. You will have an opportunity to vote in these amendments and voice your comments, concerns, and questions.

In summary, this year has been focused on how we can better serve you. You are not just our members, or our peers, but you are our aerospace medicine family, and we want to make sure that we are meeting your needs and providing you with tools and opportunities to be successful in this field.

We thank all of you for being part of this amazing family and hope to see you at AsMA this week!

Kseniya Masterova, B.S.
AMSRO Vice President
University of Texas Medical Branch MD/PhD Student MS2
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Pages of Discovery

Dedicated to propelling forward the world of aerospace medicine

Hello stargazers! I just returned from an amazing rotation in Nepal- a wilderness medicine high altitude elective through Virginia Tech with Mt. Everest Base Camp Trek. I was very fortunate to attend such a course during my second year residency elective. I met many different incredible medical students, residents, fellows, and attendings from both the United States and the United Kingdom on a trek to the highest place on Earth. I will be posting about it on the Exploration Medicine Podcast,but some highlights were being able to teach some wilderness medicine to medical students in Kathmandu, visiting a few rural Nepalese clinics along the way and meeting the providers there, interacting with the kind and wonderful Sherpa people, experiencing high altitude and hypoxia first hand, seeing the rugged beauty of the majestic Himalayas and being able to visit and meet the great physicians working at the Everest ER. Although the trekking at some times was difficult, the experience was definitely worth it and I would recommend to anyone wishing to learn more about global rural medicine/ wilderness medicine and wanting to complete a bucket list goal of visiting Everest Base Camp as well as learning more and experiencing the effects of high altitude/hypoxia on the human body. I think that this elective is relevant to Aerospace Medicine as it deals with a very remote and austere environment with minimal resources while individuals are exposed to hypoxia/alterations in physiology, which could be an analog to the future of space exploration.

Mt. Everest, Nepal

Dr. Emily Stratton
AMSRO Executive Committee Secretary
Emergency Medicine Resident
SUNY Upstate Medical University

Neutral Buoyancy Lab

Jason David, MD Capt (USAF)
Emergency Medicine resident
University of Nevada Las Vegas SOM

This past year in April, I attended the NASA Aerospace Medicine Clerkship at Johnson Space Center. It was as pretty awesome experience learning from world experts in space medicine! We were introduced to system's based approach to human physiology in space. We even got to try out the many devices of the Advanced Resistive Exercise Device Program. It was fascinating to learn about the use of pistons to generate resistance, as microgravity makes fly-wheel and pulley systems unusable. Besides learning about an astronaut's high exercise demands, we also observed their training at the Neutral Buoyancy Laboratory. Additionally, we explored the Human Exploration Research Analog designed for facilitating long-term habitat research. It sparked thoughts on the implications of medicine in isolated, limited-resource environment. For those of you looking to sign-up for the clerkship in the upcoming years, I must say that it was an inspiring and educational experience, while highlighting the field of aerospace medicine.

Pages of Discovery

Dedicated to propelling forward the world of aerospace medicine

"This will not be an easy week for them." Nor for us, but that first study run was one of the coolest weeks of my life.

Nicolas Nelson
University of Pennsylvania

This past semester I shared an out-of-this-world opportunity launching two NASA analog studies that will help predict astronaut performance and resilience to spaceflight-specific stressors; under the University of Pennsylvania's Unit for Experimental Psychiatry. I learned about Dr. Mathias Basner's work in part through AsMA, which led me to his colleague and my future employer, Dr. David Dinges. After applying for IRB, we executed the maiden campaign of our state-of-the-art facility, the Isolation–Confinement Analog Research Unit for Spaceflight (ICARUS). For me the highlights were definitely training participants on a circuit of high-fidelity spacecraft simulators and supervising them from Mission Control as "CAPCOM." We are learning about several factors to consider regarding subject performance in isolation; for the in-lab phase of one study, we are only able to intervene remotely—if at all—through participants' headsets. What makes the experience truly meaningful is anticipating how our research will translate into human space exploration and, I believe, terrestrial applications. For anyone interested in space medicine research, find someone working on a topic you care about, and reach out! What's awesome about this field is that investigators tend to appreciate people who want to join them in their niche. It's interdisciplinary. It's collaborative.

Ste'Von Voice, MS
Medical Student at University of the Incarnate Word School of Medicine
Biomedical Science, Forensic Science, Toxicology

I came to The University of the Incarnate Word School of Osteopathic Medicine (UIWSOM) in 2016 for my master's degree. The campus is located on the former Brooks Air Force Base and was the campus of the United States Air Force School of Aerospace Medicine (USAFSAM), which was located here until 1992. It is also the place where President John F. Kennedy dedicated the School of Aerospace Medicine in 1963. Inspired, after my first year of medical school, I earned my current position as aerospace research assistant at KBRwyle Brooks City-Base, TX centrifuge and high-altitude chamber facility. In this capacity, I coach military pilots in the proper use of the Anti G-Strain Maneuver, operate the data station for centrifuge operations, serve as an inside observer for altitude studies, and update emergency protocols. In the research aspect of the position, I assist the lead aerospace physiologists in human subject research studies conducted in the centrifuge and high-altitude chambers, which includes manned and un-manned studies. I also found the opportunity to tour the Neutral Buoyancy Laboratory at Johnson Space Center. There I met with Astronaut Akihiko Ashide and his medical team where I observed a flight surgeon in action. I believe these experiences are relevant as they highlight clinical aerospace medicine and inform on the responsibilities of a flight surgeon.

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A big thank you to all for propelling forward the world of aerospace medicine

The intercom crackled and it became difficult to decipher the words on the other end of the line. The Flight Director informed me as the Chief Medical officer that there was a medical emergency. We declared a 'Code Red' situation.
The Mission Support Center (MSC) left simulated conditions to support the medical team in Oman in real-time Any medical incident constitutes as a major incident in the remote desert environment, until it is analyzed and de-escalated. Especially if an Analog Astronaut (AA) is injured during an Extra-Vehicular Activity (EVA) exercise in the AOUDA suit. In this case, it quickly materialised that an un-suited member of the field crew had sustained a fall from a quad bike, that had overturned on a sand dune and landed a few meters away. As the only member of the MSC crew that had been to the site in Oman during the bridgehead phase, I was able to offer an unique insight into the potential challenges of the desert site. After initial stabilisation by the medical personnel on site, the nearest military checkpoint ambulance was notified to retrieve the patient back to base on a spinal board. In parallel, the remote medical team relayed the 'pre-flight' patient medical history and sourced the details for an aeromedical transfer. Thankfully, the patient was able to convey a full history and the mechanism of injury was less severe than primarily anticipated. In addition, there were no positive findings after a full trauma survey. Although this case had a positive medical outcome, it emphasized the need for medical incident planning in the remote pre-hospital environment.

Later, I relinquished backpacking for an Aerospace Medical research elective in Porto Allegre, Brazil. I had packed for Rio, only to have a snowy welcome on arrival but well worth it. The research involved long days evaluating rescuer physiology whilst performing CPR both on Earth and in simulated low gravity. My research eventually led to publication and achievement of the AsMA 'Stanley Mohler' scholarship under the guidance of Prof. Thais Russomano; an inspirational researcher in the Aerospace medical field. In pursuit of my interest in aerospace medicine, I am currently working with the Space Generation Advisory Council Space Medicine Group affiliated to the United Nations Out of Space Affairs. I hope my experiences inspire you to passionately pursue a career in Aerospace Medicine.

Dr. Rochelle Velho MBChB MPH (Merit) BSc (Hons)
CT3 ACCS - Anaesthesia and NIHR Academic Clinical Fellow ITU
Excecutive UK SpaceLABS
Medical Liaison Aviation and Aerospace Medicine Systemic Review Group
Chief Medical Officer Austrian Space Forum, Mars Analog Mission

A need for Lunar Colonization

By Joseph S. Butterfield

"Whether the dim light of our modern world is a sunset, or a sunrise…that is up to you."
-Stefan Molyneux

Apollo 12 Lunar Module above the Moon [1].

The legacy of the Space Shuttle program exists largely in memory today. The surviving orbiters are on display in museums. The highlights of shuttle achievements are archived in film and in history books. The satellites and ISS components the shuttle delivered to space will eventually be decommissioned, their orbits will slowly shrink, and one by one will disintegrate during re-entry. Thirty years of low Earth orbit activities will consummate in a fiery demise. At such time, what will the United States have to show for its human spaceflight efforts? An empty sky? Before the ISS mission concludes it would be worthwhile to consider the future of NASA's human spaceflight program. Its history up to this point has been a series of starts and stops. The Mercury, Gemini, Apollo, and Space Shuttle programs all had a beginning, middle, and end. So will the ISS. Such expeditionary projects, albeit arguably necessary to develop the technology, do not leave anything enduring when they end and bring an identity crisis for NASA when they do. With the expected conclusion of the operational life of the ISS on the horizon we now have the opportunity to evolve beyond past approaches and to lay the groundwork for a lasting exploration strategy. To do so it is necessary to settle upon an actual destination in the heavens to travel to. That destination should be the lunar surface.

The point of human spaceflight after all is not spaceflight, just as the purpose of riding in an airplane is not to ride in an airplane. The point is to go somewhere, and once there, to accomplish a task. But our space program has made no serious attempt to send humans to another world for over 40 years (despite all the talk of going to Mars) and has since become a self-referential project: Construct a space station and point to it as the destination. Fly humans there and back. Rinse and repeat until…when? The accumulated knowledge gleaned from expeditions to the ISS must eventually culminate in supporting the journey to another world, otherwise what good can that data serve?

A 2014 publication by the National Academy of Sciences identified four locations that humans could feasibly visit in the near future: the near Earth asteroids, the Moon, the moons of Mars, and the Martian surface [2]. Of these I think the Moon makes the most sense. There are several important practical reasons for choosing the Moon, including short flight time, ease of communications, and affordability, but the most valuable advantage is the shift in mindset that would accompany making that choice: to view spaceflight not as an end in itself, but as a transportation conveyance to take humans from Earth to "Point B." At "Point B" the definitive work begins.

And what is that work? As I see it, the fundamental purpose of a human spaceflight program is to send humans elsewhere to live, to support nascent outposts at the outset, and to help them grow and eventually become self-sustaining. That is to say, the superlative goal is a program of colonization.

I am hard pressed to imagine any other future for NASA's human spaceflight program. If humans never again journey anywhere besides low Earth orbit, what then is the point of keeping the program afloat? It would become a moot endeavor, an unnecessary and expensive national hobby. Critics would rightly ask why have a human spaceflight program at all?

Fortunately NASA continues to enjoy widespread popular and Congressional support. This approbation reflects the desire of a large majority of Americans to keep funding space exploration. And after all the arguments have been made on the question of whether to fund space exploration or not, isn't the desire to do so really all the justification we need? It can be said that our nation was founded by the people who boarded rickety wooden sailing boats and braved crossing the Atlantic. Our ancestors were the ones not content to stay at home. The need to venture to new lands and explore new places is in our cultural DNA, and I daresay this need has kept NASA going for over 40 years since the last Apollo mission out of sheer momentum.

But we cannot live on momentum alone, and our generation needs a fresh vision of new possibilities. Setting lunar colonization as the principle goal of the human spaceflight program will give NASA the direction and focus it needs. Industry would not need to tool and retool for a constantly changing mission and instead could devote their energies toward the fulfillment of a singular purpose. Space scientists and engineers would have a better idea of what to center their research efforts around. The nation would once again know exactly what NASA stands for. This specific, distinct, achievable, well-defined, and destination-driven goal will rally America to realize it.

And that is the great invitation, a proposition to direct NASA's efforts toward achieving a permanent human presence upon another world. The rate of natural weathering on the Moon is so small that any built infrastructure could last for centuries, meaning that a program of lunar colonization could continue indefinitely. Instead of working on another project that will start and stop (and leave no legacy to bequeath to future generations) we could dedicate ourselves to an exploratory focus that will outlast our own lives and that our grandchildren would inherit and continue. The use of local lunar in situ resources bolstered with supply flights from Earth means the inhabitation of the Moon would never need to end. An incipient colony would be the seed crystal that sparks the development of the Moon into a second home and the transformation of our society into a two-world civilization. Our nearest celestial neighbor offers an opportunity to continuously push the boundaries of the possible, to extend life throughout the solar system, and to explore the mysteries of creation.

With the signing of the White House Space Policy Directive 1 in December 2017 (which directed NASA to send astronauts back to the Moon), and Vice-President Pence's announcement on March 26th 2019 to return astronauts to the Moon within 5 years, it is now time to determine the exact shape NASA's human spaceflight program will take. Adopting a vision of permanent lunar colonization and exploration will create an enduring and living legacy for ourselves and the generations to come.

Dr. Joseph S. Butterfield
Student in the St. Anthony Hospital Paramedic Academy in Lakewood, Colorado
Graduate of the American University of Antigua College of Medicine
Former Parliamentarian of AMSRO

References

[1] Williams D., and Friedlander, J., (2015). Earth's Moon – Apollo 12. Retrieved from: https://nssdc.gsfc.nasa.gov/imgcat/html/object_page/a12_h_51_7507.html

[2] No author (2014). Pathways to Exploration: Rationales and Approaches for a U.S. Program of Human Space Exploration. Page 3. Retrieved from: https://www.nap.edu/catalog/18801/pathways-to-exploration-rationales-and-approaches-for-a-us-program

Flight Engineer Red-3606 - Gynecologist in Spaceflight Analog

By Dr. Brent Monseur

You could have spotted any of the four against the Oxfordesque backdrop of Penn's quadrangle—each clad with bright red accelerometers on non-dominant wrists as they savored their last moments on Earth.

After 12 hours of surveys, interviews, and a combination of biochemical and psychiatric evaluation the crew had been chosen. Among them a native Philadelphian, a Russian security architect (Privet!), a pharmacist-cum-software-technologist-cum-Reiki master, and a budding reproductive endocrinologist. They were assigned four digit colored-identifiers matched to an operational guide, a stopwatch, a heart rate variability monitors, and various supplies to collect biospecimens for their upcoming analog emulating a long duration flight to Mars.

I am Flight Engineer Red-3606.

We entered the hatch on Mission Day Zero (MD0). Before the launch we reviewed logistics, assigned tasks, and began acclimating to our new home, a ~300m3 shuttle habitat. By design, the mission was sans phone, email, or Internet. Everything seemed in order; however, no sooner had we unpacked that one of the four exited the air lock never to return without an explanation. The remaining three underwent a baseline functional magnetic resonance imaging (fMRI) scan to determine brain activity as measured by changes in blood flow. Acoustic stimuli reverberate through your skull in what can feel like an aural onslaught; earplugs are de rigueur for terranauts. I made sure to pop out my industrial piercing to avoid the double cartilage perforation progressing to a much-undesired helical tear. Anything in your pockets?

Each room had motion detectors, cameras, and four phones to maintain constant communication with the team "on the ground", deemed Mission Control Center (MCC). The quarters including private hygiene rooms were surrounded by airlocks that connected to the flight deck where daily schedules were displayed on LED screens. The ward room (essentially a fancier name for an officers' mess hall) had a dining room table, a Mancala board (7th century Egyptian board game), and a computer station equipped with a 3D-printer. The galley was fully stocked based on crew preferences and a lovely assortment of Celestial Seasonings herbal teas (no caffeine allowed!). Thankfully, no one requested astronaut ice cream but there was ample water (Philadelphia English: "wooder") ice.

The lighting, ambient sound (read: white noise for days), and central air were controlled by MCC as was the overheard computer who we affectionately named Marsi.

The launch.

On the typical day, MCC remotely administered comprehensive computerized neuroimaging test battery for spaceflight previously validated for the astronaut corps. Performance levels were measured covering a range of cognitive domains: memory, emotion recognition, and risk decision-making. A.K.A. Push this button if x,y, z color, shape, and sound ad nauseam. Oh and you mustn't forget the survey. Surveys ad infinitum was the unofficial mission mantra. The second set of neurocognitive tests focused on critical tasks for long-duration exploratory missions to assess spatial reasoning and navigational abilities. A.K.A. Blasting through star fields, recognizing unique landscapes from a variety of perspectives, and a menagerie filled maze circa 1992 a la MS DOS's Wolfenstein. We referred to these tests as "cognition" and "spatial cognition," respectively.

The last area in the habitat was referred to as the "solar array." Here they housed high fidelity operational equipment from NASA's Johnson Space Center in order to train for use under the drastically modified physics found in microgravity. These simulations included Six Degrees of Freedom Docking (6DoF), Robotic On-Board Trainer (ROBoT-r), Simplified Aid for EVA [extravehicular activity] Rescue (SAFER), and Lunar Lander.

6DoF generally refers to the movement of an object in three-dimensional space along three perpendicular axes surge (forward/backward), heave (up/down), sway (left/right) collectively known as "translational" as well as three rotational axes yaw (nose left/right), pitch (nose up/nose down), and roll (longitudinal left/right). The simulation consisted of a series of docking flight tasks with dynamic and informational equivalence to actual maneuvers necessary to move objects in weightlessness. The operator controls two joysticks and a lever. This same software was an integral part of the Russian standard training of cosmonauts on the necessary cognitive, perceptual, and motor skills to dock.

ROBoT-r is NASA's platform to train astronauts performing docking and grappling maneuvers using the 50 ft, 900 lb Shuttle Remote Manipulator System (SRMS, or colloquially the Canadarm aboard the International Space Station (ISS). More plainly, this is the robotic arm used to deploy, maneuver, and capture payloads (cargo). On board this is housed in the cupola where I hear the view is quite nice.

SAFER refers to a self-contained maneuvering unit worn like a backpack, essentially a jetpack using nitrogen-jet thrusters to be used during rescues or in our case to photograph and repair damaged solar panels. Using flight displays relative to astronaut location to the solar array, one utilizes double joysticks (translational and rotational movement) while mindful of panel indicating fuel levels and additional communication tasks. On the first run, I may have ran directly into the ISS before inadvertently heading back into Earth's gravitational pull. MCC was very worried.

The Lunar Landing simulation is exactly as the name suggests. Using the same joysticks, we piloted the terminal descent phase of a lunar landing through a combination of front-back, side-to-side, and clock and counter clock wise twisting while manually responding to subtle color changes on the control monitor and providing verbal callouts based on fuel and altimeter readings. Yeah, so I crashed…twice. MCC aptly quoted Carl Sagan's Contact in my headpiece, "Small moves, Ellie, small moves." …Roger that.

NASA requested other mission details remain confidential. They ranged from responding to emergencies as a group or problem solving to be completed individually. There was even some on-spot arithmetic & trigonometry involved that I totally bombed. Oops.

Despite the steep learning curve, we advanced through our operational tasks each gaining varying levels of proficiency with the hardware. I learned a bunch of physics, faux-landed on the moon, made new friends, and took virtual ISS pictures while in simulated low Earth orbit. If only I had packed my selfie stick!

Spaceflight analog crewmember in the Isolation, Confinement, Analog Research Unit for Spaceflight (ICARUS) environment. This study was performed at the Hospital of the University of Pennsylvania and sponsored by the NASA Specialized Center of Research (NSCOR).

Brent Monseur MD, ScM
PGY-4 Obstretics/Gynecology resident at Thomas Jefferson University Hospital
Graduate as Reproductive biologist from Johns Hopkins Bloomberg School of Public Health
Completed Aerospace Medicine clerkship at NASA's Johnson Space Center in Houston
Doctor of Medicine from Virginia Commonwealth University School of Medicine
Board Member Emeritus for the Family Equality Council

Meet the AMSRO Officers

President Craig Kutz amsro.president@gmail.com
Craig has completed an MD/PhD from the Medical University of South Carolina in Charleston, SC. He has been an AMSRO officer for 5-years and an avid civil aviation pilot for the past few years. He is also a scientific diver for his local aquarium, diving with the sea turtles, sharks, and other coastal South Carolina fauna.

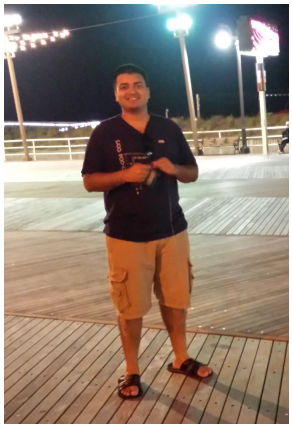
Vice President Kseniya Masterova amsro.vp@gmail.com
Kseniya is a second year M.D./Ph.D. student on the Aerospace Medicine Track at the University of Texas Medical Branch. She graduated from Loyola University Chicago with a degree in physics, biology, and biophysics in 2016. After graduating, she spent her gap year working as a research assistant in the Space Medicine Innovations Lab at the Geisel School of Medicine at Dartmouth. She has spent multiple summers at NASA Johnson Space Center working on research in Lifetime Surveillance of Astronaut Health, Exploration Medical Capability, and Exercise Physiology.

Secretary Emily Stratton amsro.secretary@gmail.com
Hailing from the beautiful state of Washington, Emily currently lives in Syracuse, New York where she is an emergency medicine resident physician at the State University of New York Upstate Medical University. She is very interested in the field of aerospace medicine and was the recipient of the 2016 Gregory G. Shaskan, MD Aerospace Medicine Education Scholarship and is active in aerospace medicine research and podcasts. In her spare time, Emily enjoys staying active, traveling, trying out new foods, writing/reading, and spending time with her animals. Emily has her SCUBA open water certification and hopes to get her pilot license sometime in the next few years.

Treasurer Stefan A. McAllister amsro.treasurer@gmail.com
Stefan A. McAllister completed a B.S. degree in psychology and an M.S. degree in biology with a concentration in molecular genetics and biochemistry at Georgia State University, along with an M.S.P.H. degree (honors) at Meharry Medical College. After graduation, he interned at the NASA Ames Research Center in the Psychophysiological Research Laboratory and the Vision Science and Technology Group. He was an active member of every AMSRO committee and has served as the chair/co-chair of the AMSRO Scientific Paper Award Committee from 2014 through 2017. Also, he served as co-chair of an AsMA Scientific Meeting Session and deputy chair of the AsMA Committee on Career Development. Currently, he is a member of the National Stuttering Association Research Committee.

Parliamentarian **Michael Greene** **amsro.parliamentarian@gmail.com**

Mike is a Senior Emergency Medicine Resident at the University of British Columbia. This year he is completing subspecialty training in aviation and space medicine through experiences which include working with the Space Medicine Team at the European Astronaut Centre, and training with the Canadian Forces and the FAA's Civil Aerospace Medical Institute. He is currently working to help develop a formal Canadian-based aerospace medicine fellowship program. Prior to pursuing medical school at the University of Calgary, Mike studied and worked in the field of aerospace engineering. He completed his undergraduate degree in Space Engineering at York University and a Master's of Applied Science in Aerospace Engineering at the University of Toronto Institute for Aerospace Studies, focusing on microsatellite development. He then gained experience in space robotics working at MDA Space Missions and became a licenced Professional Engineer. He is also an amateur Pilot and SCUBA diver.



Chief Editor **Gopal Katkoria** **amsro.orbiter@gmail.com**

Gopal's passion for medicine began with an Honors specialization in Medical Sciences at University of Western Ontario. He earned his MD at St. George's University and currently is an Internal Medicnie resident at Universtiy of Texas Rio Grande Valley. He first started to engage in his childhood passion for space as an officer for the Space Society of London and as an active member of the Royal Astronomical Society of Canada.
He finds that his passions collide and thus, he holds a special interest in Aerospace Medicine. Having being inspired during his first introduction to the field at the 89th annual meeting, he is committed to contributing his time and efforts with ever growing involvement. He hopes to promote new research, to engage in it's practice and to inspire others in the field of Aerospace Medicine.
On a side note, Gopal loves to spend his time dancing, hiking, skiing, scuba diving and exploring new cities. If you find him, get ready for an epic adventure.

Social Media / Webmaster **Andrew Mergl** **amsro.webmaster@gmail.com**

Andrew is a first-year internal medicine resident at NewYork-Presbyterian Queens, NY after an MD/MPH at St. George's University. He received an undergraduate degree in physics from McMaster University in Canada. He always had a special interest in astronomy and space and has contributed to the LIGO gravitational wave detection project during a summer work placement. He hopes to continue his training and involvement in aerospace medicine after completing residency. Other interests include reading, scuba diving, camping, and skiing.

KEEP IN TOUCH WITH AMSRO!

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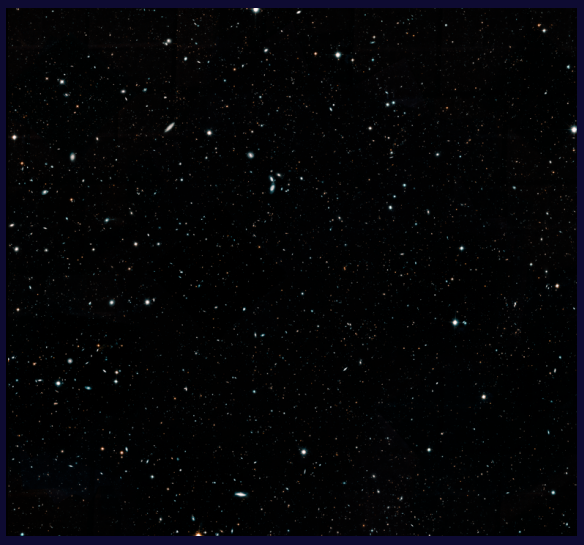
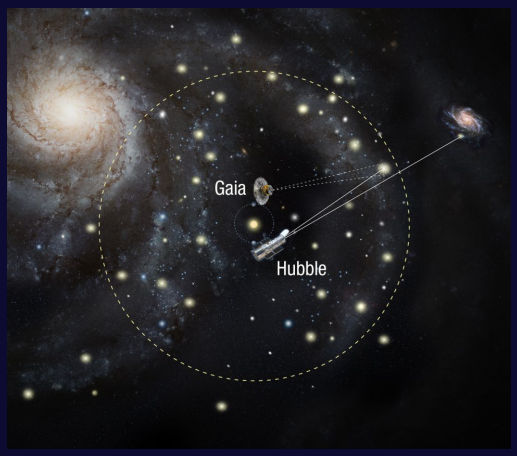
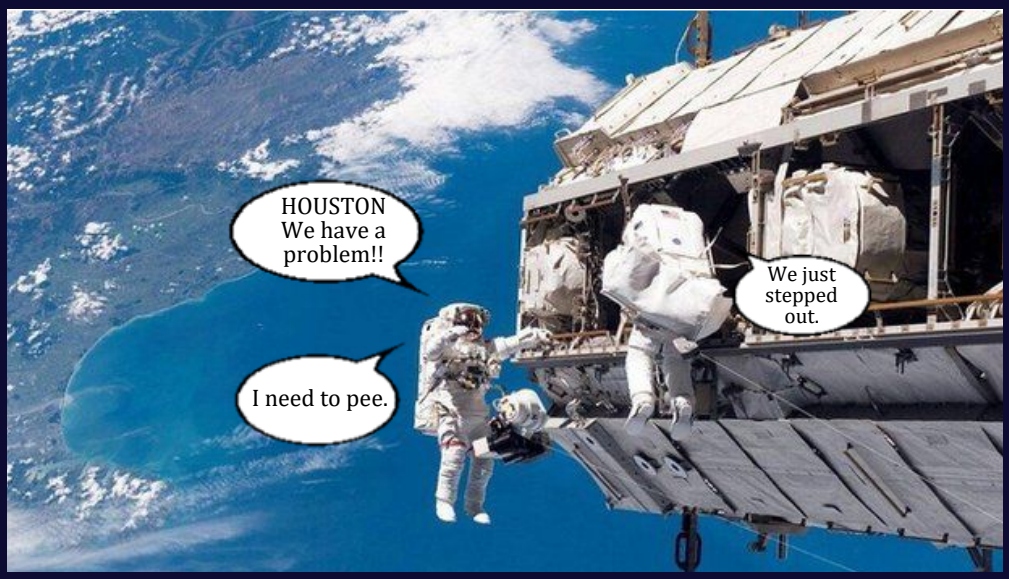
Space for Thought







Upcoming events / notices

AsMA 90th Annual Scientific Meeting 2019!
May 5-9th, Rio All Suite Hotel, Las Vegas, NV

Please refer to the AMSRO event flyer that you will be able to pick up at the meeting.

AMSRO T-shirts and Patches now available. Come find us at the information booth.

AMSRO Annual Meeting - MUST ATTEND - 05/07/2019 1730 @ Tropical G
Join us for the AMSRO Annual Meeting requiring for AMSRO members. Speaker: Dr. Erik Antonsen, MD PhD

Invitation by co-chair Dr. Sheyna Gifford: Medical Care in Space Analogs
If you are interested to learn about medical practices in a simulated environment (Mars-like), then this event is for you. On 05/07 1600 @ Brasilia 7

NEW AMSRO Chapter at Alexandria University in Egypt
Congratulations to us all for this achievement and a big appreciation for Stefan A. McAllister (Treasurer) in championing the creation of this new chapter, in coordination with Ahmed Baraka. AMSRO has truly become an international organization. We hope to establish in many other nations in upcoming years.

AMSRO Annual Membership Renewal
Don't forget to keep your AMSRO membership up to date! Contact Stefan McAllister if any queries at amsro.treasurer@gmail.com

AMSRO Elections
Final votes for executive committee officer elections will be collected until 05/04/2019 Midnight! Good luck to everyone!

Orbiter Articles
We would love to share your experiences in the field of aerospace medicine to inspire others. You may send you articles to amsro.orbiter@gmail.com for publication in the next Orbiter.

Please find more information at https://www.amsro.org AND http://www.asma.org/home