<table>
<thead>
<tr>
<th>Page</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>LETTER FROM THE PRESIDENT</td>
</tr>
<tr>
<td>03</td>
<td>DEVELOPING A SPACE MEDICINE ELECTIVE</td>
</tr>
<tr>
<td>06</td>
<td>NEWS AND OPPORTUNITIES</td>
</tr>
<tr>
<td>07</td>
<td>AEROSPACE RESEARCH FROM A PARTICIPANT’S POINT OF VIEW</td>
</tr>
<tr>
<td>09</td>
<td>DYNAMIC LEARNING IN DIGITAL EDUCATION</td>
</tr>
<tr>
<td>12</td>
<td>COMMITTEE UPDATES</td>
</tr>
<tr>
<td>15</td>
<td>UPCOMING EVENTS</td>
</tr>
<tr>
<td>16</td>
<td>KEEP IN TOUCH!</td>
</tr>
</tbody>
</table>
Dear AMSRO Members,

I have been honored to serve as your President for the past 9 months. When I attended my first AMSRO meeting at my first AsMA Conference in Denver of 2017, I was humbled by the research and accomplishments of the Members I met. I was equally moved by the warmth and camaraderie among students and residents who shared a love for Aerospace Medicine that transcended different specialties, continents, and languages. When I was elected President in the same room 4 years later to serve during the 30th anniversary of AMSRO, I was proud to see the same passions and commitment for this field multiplied by the greater number of in-person and virtual members in attendance. From consistent chapter growth and programming to new virtual partnerships and scholarships, in this past year much has been accomplished despite a condensed timeline. I am proud of not only these successes within the organization, but the intelligence, drive, and support of my fellow Executive Committee members.

In the last 9 months, AMSRO committees have further developed partnerships within AsMA and continue promoting opportunities to access career-furthering resources.
Even more, AMSRO Chapters have not only continued to grow in number, but their programming has reflected the rich diversity of our members’ interests and talents. These local, live events keep AMSRO close to active and future members, and we are so excited to introduce the new Chapter of the Year Award at this year’s AsMA conference to celebrate that amazing work.

During a recent chat with fellow Members about the future of Aerospace Medicine and trainees within it, I was struck by the optimism they all shared. Despite an ongoing global pandemic that challenges both our training and mettle, there was still a familiar joy I first found in that AMSRO meeting in 2017. I love what this organization represents and, like other Presidents before me, am so grateful for how it has positively changed my life through the friendships made and opportunities found. I wish you all the best in your training and hope the passions we share continue to drive AMSRO for many anniversaries to come!

Ari

**ESCANEE EL CÓDIGO QR PARA OBTENER UNA VERSIÓN EN ESPAÑOL DE ESTE ARTÍCULO**
I am a MD/MPH dual-degree student at the University of Michigan. I am looking forward to a residency in anesthesiology with future plans for critical care, global health, and space medicine.

Contributing to the advancement of the space frontier has been my greatest childhood dream. Thus, my first AsMA meeting in 2018 was nothing short of a breath of fresh air for me. I felt rejuvenated and in awe at the world I stumbled upon where everyone shared the same passion for medicine and space as I did. I was shocked that I did not know about this community earlier, but I was committed to getting involved and to bring the field to others at my university.

However, the more I talked with peers within the AMSRO community, the more I realized that despite the rapid growth of space medicine, there are still sparse formal educational opportunities available for medical students to gain more knowledge and exposure to the field. The few opportunities that do exist are found at select universities and were typically in-person experiences (until the pandemic), thus limiting their accessibility. As a result, many students around the country, and at my own medical school, remain unaware of the application of and possibilities within the field of space medicine. This was why I became passionate about increasing students’ knowledge of and access to this field. Quickly, I realized that a short, online mode of delivery for this content does not currently exist, and this is the gap I hoped to fill. This led me to work developing an online Space Medicine course – a project incredibly near and dear to my heart.
To lead the development of such a course, I first gathered a variety of space medicine textbooks (see below) and taught the content to myself. With permission from the textbook authors, I planned to adapt the content for my course. Next, I recruited a team of students across three medical schools who believed in this vision and helped tremendously in building the curriculum and course content. Overall, the aim of this course is to create an online curriculum that informs students about the field and principles of space medicine. The goal is to inspire students to engage with and contribute to the ongoing efforts within the field of space medicine, to explore the possibilities of building a niche in this field for their future careers, and to become the next generation of leaders in space medicine. Through a series of readings, PowerPoints with integrated case studies, journal articles, online lectures/videos, podcasts, other supplementary assignments, quizzes/assessments, and peer student presentations, students can gain insight into the field of space medicine, the effects of microgravity on human physiology, the health challenges associated with prolonged spaceflight and aviation, and current clinical applications to mitigate these risks.

Through this course, students can also be introduced to the work of various leaders in the field of space medicine, and interested students can ask to be connected to these folks as career and research mentors.

The pilot run of this launched at the U-M Medical School in Jan 2021, but it has since been formally approved as part of the U-M Medical School course catalog (under the Department of Anesthesiology) where it will live in perpetuity, and it has also been launched at the University of Cincinnati by my partner in crime on this project, Riley Ferguson! Overall, the course has reached over fifty students thus far (including undergraduate students the University of Michigan) and counting.

I owe a lot to Riley Ferguson, the rest of the multi-institutional student team, and my faculty course director, Dr. Jim Bagian (ex-NASA astronaut and faculty in the Department of Anesthesiology) for helping make this vision a reality! Our next goal is to expand the course to other schools at the University of Michigan and other medical schools nationwide, and I am pleased that students from many universities have already reached out to Riley and me about this exactly!
For those at other schools, we would love to work with you to help model something similar at your institution if you are interested, so do not hesitate to reach out!

Overall, though it certainly took me some time to find the space medicine community, now that I have, I am more eager than ever to dive in and contribute. I am humbled to see what has come of a vision I had early on in medical school, and I am excited to see what more will come of it! I know that with the support of AsMA and AMSRO at large, formal educational opportunities in space medicine will continue to grow and reach more students each year and expand nationwide!

Ultimately, my long-term goal is to combine my medical training and passion for space by contributing to the advancement of space exploration one day. Achieving an enhanced understanding of this topic is also of particular importance with the advent of commercialized spaceflight upon us. As part of the next generation of physicians, I want to be ready for the responsibility to tackle the health challenges of this ultimate medical frontier, and I very much plan on making a niche in my future career for this work! I can only thank AsMA and AMSRO from the bottom of my heart for helping me pursue my passion for space medicine, helping me set my career trajectory in motion, and helping me get closer to making my childhood dream a reality.
The University of Arizona College of Medicine – Phoenix has partnered with Banner Health and SpaceX to form the new Aerospace Medicine and Surgery (APEX) Fellowship to prepare physicians to work in commercial aerospace medicine and provide austere surgical and critical care. This new Emergency Medicine-based two-year training path starts its first fellow in 2022 and is designed to develop the next generation of flight surgeons who will advance the understanding of human physiology in space and directly support the medical endeavors of human space travel and planetary expeditions.

The WIA Foundation provides scholarships to undergraduate women interested in a career in the aerospace field to pursue higher education degrees in engineering, math or science. One or more awards will be given each year to a rising senior in college, to be applied during the upcoming academic year.

Four merit-based awards of $2000 will be given to rising juniors and seniors in college, to be applied to the 2022-2023 academic year.

To learn more about this fellowship, visit https://phoenixmed.arizona.edu/apex

The fellowship will include rotations at SpaceX, a specialized engineering curriculum with Caltech/JPL, research opportunities with NASA, clinical training in surgery, interventional radiology, ophthalmology, dentistry, hyper/hypobarics, austere medical training in Arctic environments, and Mars analog missions, among other opportunities.

Four merit-based awards of $2000 will be given to rising juniors and seniors in college, to be applied to the 2022-2023 academic year.

For more details about this award, please visit https://tinyurl.com/3aae5zip
As I suspect is true for many of you, it has always been a dream of mine to be able to experience a human centrifuge. The opportunity arose when I volunteered for a research study with Dr. Becky Blue through UTMD at NASTAR (the National Aerospace Training and Research Center) just outside Philadelphia in March 2022. Over the past several years Dr. Blue has been conducting centrifuge research on normal people with and without chronic diseases (like hypertension, diabetes, heart disease, and anxiety), to see if they can tolerate the gravitational stress of spaceflight, and in doing so is greatly increasing the population of people who can be medically cleared to experience space travel.

While I was definitely nervous getting strapped into the centrifuge for the first time, about to experience 6G, it was mostly just giddy excitement as the capsule door closed and the display booted up a computer simulation of spaceflight. When the G's hit (head to toe direction), my vision started tunneling and turning grey, and I started holding my breath in 3 second intervals and straining my legs as we had been taught to get blood out of our veins and back to our heart. We did five different centrifuge runs that day, and each one represented a different launch or landing profile, corresponding to the different vehicle classes which are in use by major commercial companies (SpaceX, Virgin Galactic, & Blue Origin).
While I was still pretty excited by the 5th run, I was very tired and slightly nauseous. A word to the future astronauts among us: I would not recommend going to space 5 times in the same day! Your stomach will regret it.

Riding the centrifuge was an awesome opportunity to support aerospace medicine research and one I think everyone interested in Aerospace Medicine should have.

To sign up for Dr. Blue’s research go here, and when you come across other aerospace studies, please forward them to AMSRO!
In 2021, Nick Saba and I began writing, recording, and editing an undergraduate taught online university course – Space Medicine with Duke University. The course is freely available on Coursera and represents the culmination of our efforts to introduce the fascinating fields of astrobiology and astronautics to new students. In particular, we share a goal to help students access these materials to improve access and diversity.

I’m sure anyone reading this has, at one point, needed to explain aerospace or space medicine to friends, families, or acquaintances and has been met with, “I didn’t even know that was something that you could study... but that’s awesome.” This typical response illustrates a crucial problem – publicity. Space and medicine both carry a lot of excitement and interest, so people are excited to learn after putting the two together.

How better to help than providing a free introductory course? Moreover, we both recognize that we have been lucky in initially discovering a relatively small scientific niche and therefore want to continue to support new students.

However, the greatest challenge we have faced is making something that is scientifically rigorous and robust for college and graduate students but engaging and accessible for high schoolers. And the statistics of who takes our course suggest we have been successful in reaching all ages and helping attract new talent to aerospace medicine. I believe that this has largely been enabled by Nick and I’s unique dynamic and taking advantage of digital education.

How We Met

I think it’s important to understand why Nick and I, despite our personality and teaching differences, work so well together.
We first met in a humid North Carolina summer camp, volunteering as counselors for 10-13-year-old-boys. Camp Kesem is about giving your all in service to kids whose parents are struggling with cancer. Nick and I both share the spirit of wanting to do anything to make our campers happy – and this ethos translates to supporting students in the various versions of the class.

Importantly, when I met Nick, I only knew him by his camp name – Hubble. He had been given this name because he loves astrobiology – the science of explaining where life may come from in the universe and assessing which planets are habitable. We stayed in contact and became good friends while I worked as an EMT and was introduced to the field of flight medicine as I worked alongside Duke LifeFlight. These initial discussions of physiology in the extreme led me to seek out opportunities in bioastronautics. When, in 2019, I found out I had been selected as a Universities Space Research Association (USRA) Intern at Johnson Space Center, I immediately reached out to Nick to see if we could build a seminar course at Duke and combine our interests under the catch-all Space Medicine.

Thankfully, he agreed, and we began building a syllabus and course materials with input from NASA physicians, researchers, and even astronauts. For the first week of the course, I prepared a 42-slide PowerPoint – the shortest of the class. On the other hand, Nick asked me how we could keep the students engaged every step of the way and would help cut down the material to make room for more participation. For the third week, I worked with the physics department to have an interactive demonstration of water freezing at room temperature. On the seventh week, Nick brought in his Oculus headset so we could virtually simulate issues faced by deep space transit.

My love of scientific rigor was coupled perfectly with Nick’s care for student engagement, which made for happy students and positive reviews.

Digitizing the Course

In late 2020 we began talks with Duke Learning Innovation to try a new project: digitizing a student-run seminar. Because of the aforementioned student feedback and learning outcomes, it would be the first course they, or any university, would want to take the risk on.
We had the course slides and content ready, but we needed new skills to realize our ultimate goal. The most challenging new skill for me was using a teleprompter. I needed the discipline to speak slowly and avoid adding extra words or thinking of new ways to phrase the content.

With animators, producers, and learning professionals working together in the spring and summer of 2021, we managed to host a private version of the digital course. With massive enrollment, Duke decided to publish the course – making it the first of its kind – in late November 2021.

Future Directions

Nick and I remain committed to expanding access to these fields as I pursue medical school this fall, and he works in the industry and is considering graduate school himself. We’re working on version two of the course, partnering with both established and new researchers in the field to continue inspiring new students to consider a career supporting human space flight. We have begun to release the first season of a complimentary podcast – Spherical Cows, with interviews from exciting guests in the associated fields and an online community. With all of these efforts, we hope that any student even remotely interesting in Space Medicine has the opportunity to explore their interests and related subjects.

If you would like to participate as a guest lecturer or be featured on our podcast, feel free to reach me at dominic.p.tanzillo@gmail.com and share the course, podcast, or community with anyone interested in learning more about aerospace medicine.

@DominicTanzillo
COMMITTEE UPDATES

AMSRO COMMITTEES HAVE BEEN BUSY ORGANIZING RESOURCES, CONNECTIONS & INCREDIBLE OPPORTUNITIES FOR AMSRO MEMBERS

MILITARY COMMITTEE

The Military Committee recently hosted a very well received event called the Aerospace Medicine Residency from a Military Perspective. A panel of three speakers at different points in their careers and offered valuable perspectives based on their experience. It was a particularly interactive event where attendees and the panelists connected and had great engaging discussions about the intersection of aerospace medicine and the military. Because this event was so successful, we hope to put together a similar event in the future!

MENTORSHIP COMMITTEE

The Mentorship Committee is organizing several opportunities and events to look out for. Following AsMA 2022, we are pairing AMSRO mentees with professional Aerospace Medicine mentors. Sign up as a mentee here: https://forms.gle/xu4oqjznvix95gKj7

We are organizing mock interviews for current residents and fourth-year medical students applying for an accredited residency or fellowship in Aerospace Medicine.

We are also excited to partner with the Aerospace Nursing and Allied Health Professionals Society to host a number of in–person and virtual events. We will be working with Dr. Annette Sobel, one of the original founders of AMSRO, to offer unique training and educational opportunities for our membership body.
In July 2019, I founded and became the first Chair of the AMSRO Chapter Establishment and Coordinating Committee. This committee was founded with the mission of guiding ASMRO members through the process of founding AMSRO chapters. Through this committee, I collaborated with enthusiastic chapter founders and successfully managed the chapter establishment process. Our collaborative efforts led to the establishment of 40 AMSRO chapters in 7 countries and on 5 continents. These chapters are located throughout Australia, Canada, Egypt, the United States of America, Ireland, Japan, and New Zealand. Also, many of these chapters are located at colleges and universities, while other chapters cover entire regional areas.

AMSRO chapters provide members with the opportunity to collaborate and plan different activities related to the field of aerospace medicine. Several chapters have held activities such as online guest speakers and aerospace medicine career forums. Recently, I established the AMSRO Chapter of the Year Award which will be presented annually to the AMSRO chapter that demonstrated outstanding achievement through its activities.

I would like to encourage AMSRO members to establish a chapter in your area or participate in your local chapter’s activities. This will provide us with the opportunity to work together as a team as we pursue careers in the field of aerospace medicine.
In the past year, the Diversity Committee has been developing biography highlights of minorities in aerospace to be published on the AMSRO website, organizing outreach efforts to minority medical students to raise awareness of aerospace medicine, and successfully selected a well-deserving Diversity Scholarship winner: Ahmed Baraka (Egypt)!

If you’ll be at this year’s AsMA conference, come attend Andrew Lam’s poster session, “Diversity in Aerospace Medicine: Where We Are and Whether It Matters” (05/26/2022 1:30–3 pm Tuscany 5–6), for a summary of what we currently know about diversity in the field and ideas for future research directions.

Our email is AMSRO.Diversity@gmail.com. Please email us if you would like to be included on periodic updates or assist with any of our initiatives!
UPCOMING EVENTS

AEROSPACE MEDICAL ASSOCIATION (ASMA) 92ND ANNUAL SCIENTIFIC MEETING
- Reno, Nevada
- May 22–27, 2022

INTERNATIONAL CONFERENCE ON AEROSPACE MEDICINE (ICAM)
- Paris, France
- September 22–26, 2022

ASSOCIATION OF OCCUPATIONAL HEALTH PROFESSIONALS NATIONAL CONFERENCE
- Austin, Texas
- September 7–10, 2022
## CURRENT AMSRO OFFICERS

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>Ari Epstein, DO</td>
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<tr>
<td>Vice President</td>
<td>Ben Johnson, MS3</td>
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<td>Christine Schwartz, MD</td>
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<td>Travis Lambert, MD</td>
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<td>Chief Editor</td>
<td>Marlee Mason-Maready, MS2</td>
</tr>
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<td>Parliamentarian</td>
<td>Riley Ferguson, MS3</td>
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<tr>
<td>Webmaster</td>
<td>Corey James Morris, OMS4</td>
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<td>RAM Representative</td>
<td>Karen Ong, MD</td>
</tr>
</tbody>
</table>

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