

# Orbiter

The Official Newsletter of the Aerospace Medicine  
Student and Resident Organization



## SUMMER BLAST-OFF!

Dear AMSRO members,  
Welcome back to another issue of *The Orbiter*. This is your AMSRO Orbiter summer send-off wishing you an amazing summer. Write about your summer experiences from conferences, internships you have participated in, your research projects, or any news of members. Please send your articles my way. All of this may be sent to: [laura.drudi@mail.mcgill.ca](mailto:laura.drudi@mail.mcgill.ca). Enjoy the issue and I look forward to your feedback and your articles! Have a great summer everyone

Laura Marie Drudi

### ORBITER 2011 Issue 2

#### In this issue:

- The Scholarship Winners
- Heading to ISU
- Space-Earth Innovations
- Upcoming Opportunities

## THE SCHOLARSHIP WINNERS ARE...

### Recipient of the Jeffrey R. Davis Scholarship



**Leigh Lewis** was born and raised in Orange Park, FL. After receiving her BS from Eckerd College, she began medical school at the University of Miami School of Medicine. There she joined the US Navy through the Health Professions Scholarship Program. After earning her MD, Leigh completed a surgical internship at National Naval Medical Center in Bethesda, MD. She then completed Flight Surgery training and served as the flight surgeon for VP-30 in Jacksonville, FL, the largest squadron in the Navy. After completing her active duty obligation, Leigh began the combined Aerospace and Internal Medicine Residency at UTMB. She earned her Master's of public health in 2010. She is now in her practicum year rotating at Johnson Space Center.

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## Aerospace Medical Student and Resident Organization Travel Scholarship Recipients:

**Natacha Chough** from Camas, WA, is a PGY1 in the Stanford/Kaiser Emergency Medicine Residency. She received her BSc in Cell & Molecular Biology from the University of Washington in 2001 and her MD from the University of Michigan in 2010.

Natacha's involvement with NASA began in the summer of 2000 as an intern in the NASA Ames Astrobiology Academy researching oxidative damage in microbial lifeforms. She returned to Ames in 2001 to staff the NASA Academy and subsequently took a position at JPL, where she worked as a Planetary Protection Biologist for the Mars Exploration Rovers, Spirit and Opportunity.



Natacha also served as a Peace Corps Volunteer in Turkmenistan from 2003-2005, teaching community health to women and children. This overseas service allowed her the opportunity to learn Russian and to visit Star City as part of the 2005 Summer Space Biology and Medicine School, hosted by IBMP and Moscow State University.

While in medical school, Natacha participated in both the JSC and KSC aerospace medicine clerkships, stratifying risk for the Constellation project's Medical Conditions List and reviewing crew wilderness medicine training for Soyuz landings. She looks forward to continuing her relationships with those in space medicine and plans to apply to the UTMB Aerospace Medicine Residency once finished at Stanford.



**Derek Nusbaum** is from Sturgis, MI, a town of 12,000 people about a mile from the border of Michigan and Indiana. He did his undergrad at Northwestern University and got his degree in Biological Sciences with a concentration in Neurobiology. He completed medical school at Michigan State University. This is where he got interested in aerospace medicine. He has always been interested in space, but at first didn't seriously consider making a career out of it. However, in medical school, he participated in a wilderness medicine conference in Big Sky, Montana. There, Jim Bagian presented on "Wilderness Medicine in Space", where he discussed aerospace medicine, sparking Nusbaum's interest in aerospace medicine.

Nusbaum is currently at Baylor College of Medicine doing a joint residency in internal medicine and PhD in Neuroscience. His research is investigating the pathophysiology of elevated intracranial pressure and vision loss associated with spaceflight. After that, he hopes to do a second residency in aerospace medicine and eventually go to become a NASA flight surgeon. Additionally, he is very interested in remote medicine and would hope to serve as medical officer for expedition sorties to remote locations (Everest, South Pole, Arctic, deep sea). Travel medicine and medicine in underserved areas is also one of Nusbaum's passions. He has spent time working in clinics in multiple countries in Africa and South America with his fiancé, and they are further planning on going to Vietnam in the winter of 2012.



## HEADING TO THE INTERNATIONAL SPACE UNIVERSITY

*By Laura Drudi*

*Medical Student, MDCM candidate 2013*

*McGill University*

I remember when I first learned about the International Space University (ISU). I stumbled upon the ISU website while I was completing my first year at McGill University in 2007. I knew at that moment, that I would participate one day in ISU. Four years later, I am now embarking on an incredible journey to meet individuals from across the globe who share my passion for space.

ISU offers both a summer studies program (SSP) and an MSc in Space Studies. This year, SSP is being held in Graz, Austria from July 11<sup>th</sup>-September 9<sup>th</sup>, 2011. ISU is an opportunity for aspiring leaders in the space industry to work with students, young professionals, and professionals from around the world with similar interests in the domains of space physical sciences, life sciences, policy, and business and management, and to further learn from their expertise. I see ISU as an occasion to pursue my interests in space life sciences, allowing me to expand on the research I have already conducted. My intention is to be part of this cutting-edge field bringing together all the medical knowledge acquired over the years and applying it to the extreme environment of space. ISU further offers me the platform to expand all of my ideas, all the while pushing the frontiers of my imagination.

## RESEARCH AND EDUCATION

### SPACE-EARTH INNOVATIONS IN SPACE MEDICINE

*By Annie Martin, BSc., MSc*

*Canadian Space Agency*

Challenges associated with human space exploration beyond low-Earth orbit bring considerable concerns about healthcare delivery in space. Medical concepts including telemedicine and medical autonomy are being developed to compensate for the important communication delay and the impossibility of emergency return of Mars missions. Remote and isolated communities on Earth, such as northern communities, rural villages, industrial platforms and military settings are also coping with limitations similar to human spaceflight: absence of specialist, limited medical equipment, expensive or impossible emergency transportation to urban centers, etc. The development of concepts of operations, technologies, telemedicine applications and medical protocols could serve both space and terrestrial medicine communities with potential spin-off and spin-in effects. The development of a training curriculum for remote care physician to ensure the maintenance and acquisition of medical skills is another example of dual-use project for both space missions and remote and isolated communities.

As part of my PhD thesis, I am looking at socioeconomic and technological impacts of space innovations in Canada. The scope of my research will go beyond space medicine and include other sectors such as telecommunications, Earth observation and technological advances for space exploration. One of the major topics studied will be space medicine. The Canadian geography offers the challenges of distance and resource scarcity with gaps in access to standardized medical care. Similarities in healthcare challenges for exploration-class missions and northern Canadian communities offer opportunities for mutual impacts. Under the supervision of Catherine Beaudry at École Polytechnique de Montréal, I'll be studying the innovation pathways of space research looking at knowledge production, technological transfer, innovation networks and performance of the Canadian Space Agency.

Strategies for healthcare delivery in remote and isolated regions, whether on Earth or other planetary bodies, could gain from the cross-fertilization of ideas of space and terrestrial medicine rather than operating in silos.

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## UPCOMING OPPORTUNITIES

### INTERNATIONAL SPACE UNIVERSITY (ISU)

ISU will be hosting its 2011 Summer Studies Program in Graz, Austria. A variety of scholarships are available through the Canadian Federation of ISU, as well as the National Space Society. The 2012 Summer Studies Program will convene at Florida's Space Coast, and the 2013 Summer Studies Program will be taking place in Brazil.

### 2011 INTERNATIONAL ASTRONAUTICAL CONGRESS

All eyes will be on Cape Town, South Africa for the annual meeting of the International Astronautical Congress (IAC). Students and young professionals can be sponsored through their national space agency through International Space Education Board (ISEB). NASA, CSA, ESA, and JAXA offer a variety of scholarships; as well there are youth grants that are given on a competitive basis through the International Astronautical Federation committee.