

Research Subject : A02-2 Comprehensive Understanding of the Adaptive Response of Vestibular Plasticity and Strategies against Adaptation Disorders,  
Visualizing and analyzing space omics datasets

Host researcher : Masafumi Muratani (a co-researcher of A02-2, Professor, Faculty of Medicine, University of Tsukuba)

Visit duration : April 15, 2019 – June 30, 2019

Place of visit : Osaka Ohtani University and University of Tsukuba

Name/Title : Dr.Lindsay Rutter

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From April to June 2019, I was an invited scientist in Tsukuba and Osaka through the “Living in Space” grant funded by JSPS and managed by JAXA. I completed my Ph.D. in Bioinformatics and Computational Biology at Iowa State University and interned at the NASA GeneLab, where I became intrigued with analysis and sharing of space omics data. I learned about the Genome Biology Lab at the University of Tsukuba through Dr. Toru Shimazu (Japan Space Forum) and Dr. Kasthuri Venkateswaran (Jet Propulsion Laboratory). Having previously enjoyed research positions in Japan (at Okinawa Institute of Science and Technology and Nagaoka University of Technology), I was excited to participate with support from this program.

Led by Dr. Masafumi Muratani, the Genome Biology Lab at the University of Tsukuba provides genomic sequencing services for scientists in Japan including some of the studies using the International Space Station. During my time in the lab, Dr. Muratani and I deliberated about how to make communication more effective between space omics groups across Japan using modern databases. I also helped a graduate student, Fujita Shin-ichiro, apply visualization tools derived from my doctoral work to space omics data. I was fortunate to deliver a presentation to the Next Generation Sequencing Super-Group, where I demonstrated my recently-developed open-source genomics visualization tools and discussed my experiences as an intern at the NASA GeneLab.

While in Osaka, I met with Dr. Tomoaki Ichijo at Osaka Shoin Women’s University to discuss recent advances in microbial monitoring on the Kibo section of the International Space Station. I also met with Dr. Masao Nasu, Dr. Uchii Kimiko, and Dr. Kenzaka Takehiko at Osaka Ohtani University. We discussed space omics databases, visualization of omics datasets, and future avenues related to microbial monitoring on the International Space Station.

I am grateful to have received support through the “Living in Space” grant. I would like to thank JAXA secretariat Erika Tsunakawa for kindly assisting me with the logistics of this visit. I thoroughly enjoyed collaborating with space life scientists at the University of Tsukuba and Osaka University and look forward to future collaborations in this exhilarating topic.

