

**Statement by Kevin Conole, United States Representative,
on “Space and Global Health,” February 5, 2024**

Thank you, Chair. The United States Delegation appreciates the subcommittee noting the crucial role of space data and technology in the public health domain. Thank you to Switzerland for their leadership and the development of the Space and Global Health Network.

Chair, this has been a tremendous year for the U.S. and our commercial space partners in regard to research on the International Space Station that could improve medical care and global health. Through a NASA ISS National Lab-sponsored investigation, researchers harnessed the microgravity conditions of the orbiting laboratory to bioprint a human knee meniscus. Using live human cells, the meniscus was printed with the updated biofabrication facility on board. The ability to bioprint tissues may profoundly change organ transplantation, repair of cardiac valves, diabetes, or orthopedic procedures.

In fiscal year 2023 alone, more than 110 ISS National Lab-sponsored payloads were delivered to the orbiting laboratory—the most ever in a single year. These include physical and life sciences experiments, technology demonstrations, investigations to advance in-orbit production applications, and even student-led projects—all aimed at benefiting humanity and establishing a robust low-Earth orbit economy. Additionally, major pharmaceutical companies continued R&D on the ISS to improve drug discovery and development for patients on Earth.

Chair, the ISS National Lab-sponsored study Protein-Based Artificial Retina Manufacturing evaluated a manufacturing process to develop artificial human retinas using a light-activated protein called bacteriorhodopsin, which could replace the function of damaged light-sensing cells in the eye. The process creates implants by applying layer after layer of a thin film. Microgravity may improve the quality and stability of the films by limiting the aggregation and sedimentation of particles that occur on Earth. The investigators conducted earlier experiments on the space station to determine whether the layering process worked better in microgravity.

Another significant area of research on the ISS is the study of Alzheimer’s disease. The Ring Sheared Drop investigation examines the formation and growth of amyloids and fibrils without the complications associated with the solid walls of

a container, because in microgravity, surface tension provides containment of the liquid. Amyloids are fibrous, extracellular protein deposits found in organs and tissues that associated with neurodegenerative diseases such as Alzheimer's. Results from this research could contribute to better understanding of these diseases as well as to the development of advanced materials.

The research conducted on the ISS National Laboratory over the past year may have profound implications on global health and medicine. From studying microbes in microgravity to investigating the causes of Alzheimer's disease, to bioprinting organs and tissues, the findings from these studies have the potential to revolutionize our understanding of various health conditions and lead to the development of new treatments. As we continue to explore outer space, the benefits of space research for life on Earth are increasingly clear.

Chair, as the climate crisis increases the heat risks to public health, NOAA, together with U.S. and international partners is applying Earth observations to help communities better manage the increasing heat risks. In 2022 NOAA and partners launched a pilot project "Building Equitable Resilience to Extreme Heat" to support local initiatives designed to protect public health and reduce the negative health effects of extreme heat events by connecting NOAA's climate information with those who need it most, especially disproportionately affected populations. In addition, NOAA continues working with the Global Heat Health Information Network to help other countries replicate effective urban heat island mapping campaigns. Furthermore, NOAA, in partnership with the Group on Earth Observations, and the WMO is collaborating on development of a Global Heat Resilience Service (GHRS), which will link Earth observation data on heat and related health risks in a co-designed service. The GHRS will aim to provide every urban area in the world with data on the health risks from exposure to extreme heat, thus enabling cities to better adapt and mitigate associated risks for their citizens.

In addition, NOAA operates the Search and Rescue Satellite Aided Tracking (SARSAT) system – part of the international Cospas-Sarsat Program, which helps locate lost or distressed aviators, mariners and recreationists at any time, in any condition, around the world. In 2023, NOAA satellites helped rescue hundreds of people around the world. Thank you, Chair, for the opportunity to share this information with the subcommittee and to highlight the health benefits of space exploration to the world.