

The NASA Biological Institutional Scientific Collection (NBISC): Tissue and Microbe Biospecimens to Advance Space Research

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The NASA Biological Institutional Scientific Collection (NBISC) is a biorepository of non-human biospecimens from NASA-funded spaceflight investigations and correlative ground studies. The collection has its roots in the 1960s through collaborations by NASA Ames Research Center with other NASA centers, universities, and international space agencies by sharing non-human biospecimens from spaceflight and space-relevant ground experiments. These collaborations have advanced the field of space exploration by helping to maximize the data gained from spaceflight and other NASA-funded experiments. NBISC coordinates closely with the Biospecimen Sharing Program (BSP) which is responsible for organized sample collection from spaceflight and ground rodent experiments. In 2022 NBISC partnered with HRP's Biospecimen and Tissue Sharing Collection (BTSC) Program to also archive samples from HRP's Space Radiation Element-funded studies which primarily involve rodents exposed to various radiation protocols at the NASA Space Radiation Laboratory (NSRL) and other analog facilities. To date, more than fifty thousand biospecimens from BTSC have been transferred to NBISC for distribution to the community. In 2023, NBISC embarked on a new Space Biology funded endeavor to create the Space Microbial Culture Collection (SMCC) which will serve as a central repository for microbial isolates associated with space flight, gravitational, and space radiation research. This presentation will highlight several success stories of analyses carried out using archived NBISC samples received by researchers in recent years and will detail the process for proposing and receiving samples from NBISC, BTSC and SMCC. Making available these 150,000+ unique biospecimens to the scientific research community, NBISC not only serves as a repository for storing and distributing non-human biospecimens, but also acts as a resource to enable new discoveries that will benefit NASA and humankind.