NASA AMES INSTITUTIONAL SCIENTIFIC COLLECTION (ISC)

Alison J. French[3], Alan E. Wood[2], April Gage[2], Danielle Lopez[2], and Helen Stewart[1]
[1]NASA (helen.j.stewart@nasa.gov), [2]KBRWyle, [3]Bionetics: Ames Research Center, Moffett Field, CA

NASA's current human space flight research is directed towards enabling human space exploration beyond Low Earth Orbit (LEO). The Space Flight Payload Projects; Rodent Research, Cell Science, and Microbial Labs, flown on the International Space Station (ISS), benefit both the global life sciences and commercial space communities. Verified data sets, science results, peer-reviewed publications, and returned biospecimens, collected and analyzed for flight and ground investigations, are all part of the knowledge base within NASA's Human Exploration and Operations Mission Directorate's Space Life and Physical Sciences Research and Applications (SLPSRA) Division, specifically the Human Research and Space Biology Programs. These data and biospecimens are made available through the public LSDA website.

The Ames Institutional Scientific Collection (ISC), or ARC Biobank, https://www.nasa.gov/ames/research/space-biosciences/biobank , stores flight and ground biospecimens from Space Shuttle and ISS programs. These specimens are curated and managed by the Ames Life Sciences Data Archive (ALSDA), an internal node of NASA's Life Sciences Data Archive (LSDA). The ARC Biolbank stores over 15,000 specimens from experiments dating from 1984 to present. Currently available specimens include tissues from the circulatory, digestive, endocrine, excretory, integumentary, muscular, neurosensory, reproductive, respiratory and skeletal systems. The most recent contributions include RNA, DNA and protein extracts from Rodent Research 1 and tissues from Rodent Research 4.

NASA's biospecimen collection represents a unique and limited resource. The use of these biospecimens maximizes utilization and scientific return from these unique spaceflight payload and ground control research subjects. These biospecimens are harvested following complex, costly NASA research activities to meet primary scientific objectives. Once the primary scientific objectives have been met, the remaining specimens are made available to provide secondary opportunities for complementary studies or new investigations to broaden research without large expenditures of time or resources. Innovative ways of sharing this information ultimately advances the frontiers of human space exploration as well as scientific understanding of the effects of gravity on life on earth.

This poster presents information about space flown biospecimens that are currently available on the NASA Ames Life Sciences Data Archive. Website: https://lsda.jsc.nasa.gov/

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[1]Bionetics, [2]KBRWyle, [3]NASA (helen.j.stewart@nasa.gov): Ames Life Sciences Data Archive, NASA Ames Research Center, Moffett Field, CA

The Ames Life Sciences Institutional Scientific Collection (ISC) is host to flight biospecimens from the Space Shuttle and ISS programs that are curated and managed by the Ames Life Sciences Data Archive (ALSDA). The Ames ISC Biospecimen Sharing Program (BSP) ensures that valuable tissue samples from rare, complex and costly spaceflight experiments, and not part of primary investigations, will be made available to the scientific community for analysis. The main objective of the program is to maximize overall scientific return from the specimens flown, with a secondary goal of encouraging broader participation of the research community. The Ames ISC BSP avoids waste of these valuable specimens and advances scientific understanding of the physiological and molecular changes that occur when research subjects are exposed to the space environment. The most recent contribution to NASA's ISC BSP is from Rodent Research 5(?). Currently available biospecimens are summarized in the table below:

In addition, omics analysis are publicly available at http://genelab.nasa.gov

AVAILABLE BIOSPECIMENS		2016	2014	2011	2010	2007	2001	1996	1995	1993	1993	1991	1985
		RR3	RR1	MI2	Immune	CBTM2	CBTM	NIH.R3	NIH.R2	PARE.03	SLS-2	SLS-1	SL-3
System	Tissue	Mouse	Mouse	Mouse	Mouse	Mouse	Mouse	Rat	Rat	Rat	Rat	Rat	Rat
Circulatory	Blood, Bone marrow, Heart, Lymph nodes, Spleen	X				X		X		X	X	X	
Digestive	Caecum, Colon, Duodenum, Gastrointestinal Tract, Gut, Ileum, Intestine, Jejunum, Pancreas, Proventriculus, Stomach	X	X	X		X	X	X		X	X	X	
Endocrine	Adrenal glands, Liver, Salivary glands, Thymus, Thyroid	X	X	X	X	X		X	X	X	X	X	
Excretory	Bladder, Fecal samples, Kidney	X	X	X	X	X		X		X	X	X	
Integumentary	Adipose, Skin	X	X			X	X	X		X			
Muscular	Adductor longus, Diaphragm, Extensor digitorum longus, Gastrocnemius, Patellar tendon, Plantaris, Soleus							X		X	X	X	X
Neurosensory	Brain, Eyes, Hypothalamus, Pituitary	X				X		X		X	X		X
Reproductive	Gonads, Ovaries/uterus, Testis	X				X		X		X	X	X	
Respiratory	Lung, Trachea	X			X	X		X		X	X	X	
Skeletal	Femur, Humerus, Jawbone, Parietal bone, Ribs, Sternum, Tail, Tibia, Vertebrae	X	X			X	X	X			X		

To locate available biospecimens visit the Life Sciences Data Archive (LSDA) at:
https://lsda.jsc.nasa.gov/cf/scripts/biospecimens/bio_search_start_adv.cfm
To request biospecimens submit the form at: **https://lsda.jsc.nasa.gov/common/dataRequest/dataRequest.aspx**
For more information email: arc-dl-alsda@mail.nasa.gov