

Student Space Experiments

A wide range of experiments can be performed on a single mission using the standardized ITA/BSE hardware. Simple experiments for younger students may involve plant and seed studies, simple fluid diffusion, and crystal growth. More advanced studies may include cell biology, film formation, microencapsulation of drugs, etc.

Past Student Experiments

ITA and Space Outreach™ have conducted a very successful 20-year program utilizing private sector resources with elementary schools through post-graduate universities.

The following is a list of previously flown student experiments that were conducted utilizing ITA's MDA and DMDA mini-labs.

Mission	Experiment Name	School	Partners/ Program	School Type	Year
STS-52	Larval Development of Brine Shrimp	Titusville High School, Florida	Spaceport, Florida	High School	1992
STS-52	Coreopsis Seed Germination	Citrus High School, Florida	Spaceport, Florida	High School	1992
STS-52	Tin Crystal Production in Microgravity	Hialeah-Miami Lakes High School, Florida	N.A.	High School	1992
STS-52	Columbine Seed Germination	Wakulla Middle School, Florida	Spaceport, Florida	Middle School	1992
STS-52	Coreopsis Seed Germination	Tate High School, Florida	Spaceport, Florida	High School	1992
STS-52	Mustard-Spinach Seed Germination	The Peddie School, NJ	N.A.	Middle School	1992
STS-52	Brassica Rapa (Mustard Seed Variety) Reproduction	J.P. McCaskey High School, PA	N.A.	High School	1992
STS-52	Clotting Fibrinogen with a Snake Venom Enzyme	T.C. Williams HS, VA, Jeb Stuart HS, VA, Dunbar Senior HS, VA	National Space Society, NIH	High School	1992
STS-56	Fish Egg Hatching	Pennsville High School, NJ	ORBIS Scientific	High School	1993
STS-56	Zoology and Botany Experiments	Stewart & Whitcomb Elementaries	Lockheed Martin	Elementary	1993
STS-56	Mushroom Mycelial Growth	Unionville High School, PA	J.B. Swayne Spawn Co.	High School	1993
STS-56	Brassica Rapa Production	J.P. McCaskey HS, PA	N.A.	High School	1993
STS-56	Heart Cells in Culture	The Peddie School, NJ	Worthington Biochemical	High School	1993
STS-56	Human Red Blood Cell Morphology	International Space University	N.A.	University	1993
STS-67	Effects of Microgravity on Seeds in Space	Brandywine Wallace Elementary, PA	N.A.	Elementary	1995
STS-67	Brine Shrimp and Seeds in Space	Hazel Green HS, AL	N.A.	High School	1995
STS-67	Seeds in Space	Lockheed?	N.A.		1995

STS-69	Vegetable Seeds	Hazel Green HS, AL	N.A.	High School	1995
STS-69	Effects of Microgravity on Vegetable Seeds	Brandywine Wallace Elementary, PA	N.A.	Elementary	1995
STS-69	Cardiomyocyte Degeneration	Tufts Univ./ U. of Kansas	Worthington Biochemical	University	1995
STS-80	Formation of DNA/Biliposome-condensate	International Space University	N.A.	University	1996
STS-80	Electro-Rheological Fluid Particle Dispersion in Microgravity	International Space University	N.A.	University	1996
STS-80	California Poppy Seeds	McGaugh Elementary School Seal Beach, CA	N.A.	Elementary	1996
STS-80	Biosurfactants	Southern HS, Baltimore, MD	Center for Marine Biotech	High School	1996
STS-80	Effects of Microgravity on Lead Iodide	Glenbrook HS, IL	NSS	High School	1996
STS-80	Water Bears	Glenbrook HS, IL	National Space Society	High School	1996
STS-80	Killifish Embryos	Glenbrook HS, IL	N.A.	High School	1996
STS-80	Effects of Microgravity on Metal Durability	Mount Nittany Middle School, PA	N.A.	Middle School	1996
STS-80	Effects of Microgravity on Gas Diffusion	Park Forest Middle School Mount Nittany Middle School, PA	N.A.	Middle School	1996
STS-80	Effects of Microgravity on Gelatin and Base Diffusion	Park Forest Middle School, PA	N.A.	Middle School	1996
STS-80	Tin Crystal Production	New River Middle School, FL	Spaceport Florida	Middle School	1996
STS-80	Larval Development of Artemia Salina	Titusville High School, Florida	N.A.	High School	1996
STS-80	Fibrinogen Blood Clot Formation	Manhasset High School, NY	American Diagnostica	High School	1996
STS-95	Cardiac Tissue Response to Microgravity	Graduate Student, Mass	N.A.	University	1998
STS-95	Inorganic Crystal Formation	Milton Academy, Mass.	N.A.	High School	1998
STS-95	Effect of Microgravity on the Development of Nematode Worms	Northeast High School, PA	N.A.	High School	1998
STS-95	Fibrinogen	Guid Manhasset High, NY	N.A.	High School	1998
STS-95	Radish Seed Growth with Gibberlic Acid	Vero Beach High School, FL	N.A.	High School	1998
STS-95	Changes of Morphology of Endothelial Cells	Morehouse School of Medicine, GA	N.A.	University	1998
STS-95	Micro-tubule formation	International Space University	European Space Agency	University	1998
STS-95	Sugar Crystallization	University of Sao Paulo, Brazil	N.A.	University	1998

STS-95	Lipase Formation	FEI University, Brazil	N.A.	University	1998
STS-95	Ligation of DNA Molecules	Oregon State University & ASGSB	N.A.	University	1998
STS-95	Muscle Cells	Brown University/ISU/ASGSB	N.A.	University	1998
STS-95	Diatom Reaction in Microgravity	University of Alabama, Huntsville	N.A.	University	1998
STS-95	Sweet Potato Cuttings	Tuskegee University	N.A.	University	1998
STS-95	Biofilm Formation in Microgravity	SW Texas State University and Travis Middle School	N.A.	University & Middle School	1998
STS-95	Tomato Seeds	Houston area elementary schools	Lockheed Martin	Elementary	1998
STS-95	Emulsion Studies in Micro-g	Portuguese elementary schools	CEP (Compagnia Espacial Portuguesa)	Elementary	1998
STS-95	Mouse Osteoblast Cell Growth	Graduate Student, Israel	ISU	University	1998
STS-95	Planaria Regeneration	UniVap University, Brazil	N.A.	University	1998
STS-95	Silver Crystal Growth	College Maxime Alexandre High School, France	ISU	High School	1998
STS-95	Strawberry Seed Germination	Palmetto High School, Manatee County High Schools	Manatee County Chamber of Commerce	High School	1998
VS-30 Brazilian Sounding Rocket	Planaria Regeneration	UniVap University, Brazil	N.A.	University	1999
VS-30 Brazilian Sounding Rocket	Crystallization of Pharmaceutical Products	University of Sao Paulo (USP), Brazil	N.A.	University	1999
VS-30 Brazilian Sounding Rocket	Lipase Emulsion Stability	Faculty of Industrial Engineering (FEI), Brazil	N.A.	University	1999
VS-30 Brazilian Sounding Rocket	Photography Film Emulsion	Companhia Espacial Portuguesa (CEP), Portugal	N.A.	?	1999
STS-107	Growth of Bacterial Biofilm on Surfaces	Tel Aviv University	N.A.		2003
STS-107	Elementary Student Inorganic Crystal Growth Experiments	Elementary Schools from Kemah and Bryan, Texas, Eagle Nest, New Mexico, and Moab, Utah	Lockheed Martin	Elementary	2003
STS-107	Tin Crystal Formation	Pembroke Pines Charter Middle School, FL	N.A.	Middle School	2003
STS-107	Crystal Growth Experiment	EdVenture Lab Challenger Center	Challenger Center	Elementary school ages	2003

STS-107	Bacteria with Expression of Antibiotic Resistance	Milton Academy, MA	N.A.	High School	2003
STS-107	Biofilm Formation	Southwest Texas State University	N.A.	University	2003
STS-107	"FinS", Fish in Space Effects of Microgravity on Early Development	Chestermere Lake Middle School, Canada	N.A.	Middle School	2003
STS-134	Diabetes - PPAR-g Protein Crystal Growth	Broward College, Fort Lauderdale, FL	N.A.	College	2011
STS-134	Tin Crystal Growth in Microgravity	Nova Southeastern University, Fort Lauderdale, FL	N.A.	University	2011
STS-134	Development of Prokaryotic Cell Walls in Microgravity	Shelton H.S., Shelton Public School System, CT	SSEP	High School 12 th Grade	2011
STS-134	Apples in Space	Crystal Lake Middle School, Broward County, FL	SSEP	Middle School 8 th Grade	2011
STS-134	The Effect of Microgravity on the Ability of Ethanol to Kill E. coli.	Maitland Middle School, Foundation for Orange County Public Schools, FL	SSEP	Middle school 8 th Grade	2011
STS-134	Efficiency of Microencapsulation in Microgravity as Compared to Gravity	Lincoln Hall Middle school, Lincoln Schools District #74, IL	SSEP	Middle School 6 th Grade	2011
STS-134	Viability of Lactobacillus	Jefferson County Public Schools, Shawnee HS, Louisville, KY	SSEP	High School 9-11 th Grade	2011
STS-134	Effect of Microgravity on the Growth Rate of Murine Myoblasts?	Copper Mill Elementary, Zachary Community School Dist, LA	SSEP	Elementary 5 th Grade	2011
STS-134	Swim Patterns and Development of Zebra Fish after Exposure to Microgravity	Esperanza Middle School, St. Mary's County Public Schools, MD	SSEP	Middle School 8 th Grade	2011
STS-134	Honey as a Preservative on Long Duration Space Flights	Harry A. Burke HS, Omaha Public Schools, NE	SSEP	High School 10 th Grade	2011
STS-134	Effects of Microgravity on Lysozyme's Antibacterial Properties	Omaha North High magnate School, Omaha, NE	SSEP	High School 12 th Grade	2011
STS-134	Does the Radiation Exposure Effect Radish Seed Germination without the Protection of the Ozone Layer?	Tse Bit ai Middle School, Central Consolidated School Dist, NM	SSEP	Middle School 8 th Grade	2011
STS-134	The Development of Fertilized Tilapia Fish Eggs in Space	Milton Terrace South School, Balston Spa Central Schools Dist, NY	SSEP	Elementary 5 th Grade	2011
STS-134	Brine Shrimp Development in Microgravity	Mendenhall Middle School, Gullifod County Schools, NC	SSEP	Middle School 6 -8 th Grade	2011
STS-134	Lysozyme Protein Crystal Growth in Microgravity	Jackson Middle School, Portland Public Schools,	SSEP	Middle School 7 th Grade	2011

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STS-134	The Effect of Microgravity on Biofilm Formation by E. coli on Polystyrene Particles	El Paso Community College, El Paso TX	SSEP	College	2011
STS-134	Microgravity's Effects on Morphagens in Common Species	Hillcrest H.S. Canyon School Dist, Salt Lake, UT	SSEP	High School 11 th Grade	2011
STS-134	How does spaceflight alters mutation rate, growth rate, rate of plasmid uptake, and ability to withstand subsequent stressors in a bacterial strain?	Ballard H.S. Seattle Public Schools, WA	SSEP	High School 12 th Grade	2011
STS-135	Microgravity Yeast Experiment	Parkridge Elementary, Peoria Unified School District, Peoria, AZ	SSEP	Elementary 7 th Grade	2011
STS-135	Microgravity's effect on Tomato Growth	Annie Fisher STEM Magnate School, Hartford, CT	SSEP	Elementary 8 th Grade	2011
STS-135	Effect of Microgravity on Goldfish Embryos	Skinner West Classical, Fine Arts, & Technology School ,Chicago, IL	SSEP	Elementary 5 th Grade	2011
STS-135	The Effect of Microgravity on the Interaction of Paramecium bursaria and Paramecium caudatum in a Mixed Culture	Avicenna Academy, Grades 4-6, Life Learning Cooperative, Grades 4-12, Avicenna Academy, Crown Point, IN	SSEP	Elementary/ High School 4 th – 12 th Grades	2011
STS-135	How Does Microgravity Affect the Maximum Cell Size of Tardigrades?	Ridge View High School, Galva-Holstein, IA	SSEP	High School 9 th –12 th Grades	2011
STS-135	Physiological effects of microgravity on germination and growth of Arabidopsis thaliana	Henry E. Lackey High School, St. Charles County, MD	SSEP	High School 9 th –12 th Grades	2011
STS-135	The Growth Rate of Lactobacillus acidophilus in Microgravity	Montachusett Regional Vocational Technical High School, Fitchburg, MA	SSEP	High School 11 th Grade	2011
STS-135	Effects of Microgravity on Goodstreak Wheat	Potter-Dix Schools , Potter and Dix, NE	SSEP	Elementary & High school, 6 th -12 th Grades	2011
STS-135	The Effects of Microgravity on Oil Production in Salt-Stressed Chlamydomonas reinhardtii	LPS Science Focus Program, Lincoln, NE	SSEP	High School 11 th –12 th Grades	2011
STS-135	Effects of Microgravity on Osteoblast Specialization and Bone Growth	Bridgewater Raritan High School, Bridgewater-Raritan, NJ	SSEP	High School 11 th –12 th Grades	2011
STS-135	Deposition and Formation of Zinc Phosphate Crystals in Microgravity	Yeshiva Ketana of Long Island, Inwood, NY	SSEP	Middle School 6 th -7 th Grades	2011
STS-135	Diabetes - PPAR-g	Broward College, Fort	N.A.	College	2011

	Protein Crystal Growth	Lauderdale, FL			
STS-135	The Effect of Microgravity on Biofilm Formation by E. coli on Polystyrene Particles (Reflight)	El Paso Community College, El Paso TX	SSEP	College	2011
STS-135	Microgravity's Effect on Tobacco Seed Germination	Nawayee Center School and the American Indian Opportunities Industrialization Center (AIOIC), Minneapolis, MN	Science Museum of Minnesota & Indigenous Educational Design Corp.	High School 7 th -12 th Grades	2011
STS-135	Microgravity's Effect on Tobacco Seeds	Nawayee Center School and the American Indian Opportunities Industrialization Center (AIOIC), Minneapolis, MN	Science Museum of Minnesota & Indigenous Educational Design Corp.	High School 7 th -12 th Grades	2011
STS-135	Efficiency of Microencapsulation in Microgravity as Compared to Gravity (Reflight)	Lincoln Hall Middle school, Lincoln Schools District #74, IL	SSEP	Middle School 6 th Grade	2011