40 MARSHALL STAR

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Space-Grown Insulin Crystals Provide New Data on Diabetes

by Bob Thompson

Diabetic patients may someday reduce their insulin injections and lead more normal lives because of new insights gained through innovative space research in which the largest insulin crystals ever studied were grown on the Space Shuttle.

Results from a 1994 insulin crystal growth experiment in space are leading to a new understanding of diabetes — a hormone deficiency disease. This has the potential to significantly reduce expensive treatments, since treatment of diabetes accounts for one-seventh of the nation's health care costs. Sixteen million Americans suffer from hormone deficiency diseases such as diabetes, hepatic failure, hemophilia, Parkinson and Huntington diseases.

"The space-grown insulin crystals have provided us new, never-before-seen information," said Dr. G. David Smith, scientist at Hauptman-Woodward Medical Research Institute in Buffalo, N.Y. "As a result, we now have a much more detailed picture of insulin," Smith said.

Because of the increase in crystal size, Smith's team is able to study in more detail the delicate balance of the insulin molecule. Natural insulin molecules hold together and gradually release into the human body. With some of the new and unexpected findings, researchers may be able to improve how insulin is released from its inactive-stored state to its active state. This could greatly improve the quality of life of people who are on insulin therapy by cutting down on the number of injections they have to take.

"This new information can be used in the development of a new therapeutic insulin treatment for the control of diabetes," said Smith.

> *"This new information can be used in the development of a new therapeutic insulin treatment for the control of diabetes."*
>
> ***– Dr. G. David Smith***
> *Hauptman-Woodward Medical Research Institute*

Hauptman-Woodward is partnering with the Center for Macromolecular Crystallography, a NASA Commercial Space Center, in Birmingham, Ala.

"We are doing crystal growth experiments in the near-weightlessness of space that really tell the story of how insulin works and give us clues of how, in the long run, to defeat diabetes," said Dr.

*See **Insulin Crystals** on page 7*

NASA Photo by Emmett Given

Marshall's New Robot on Exhibit at Space & Rocket Center

Rodney Grubbs of Marshall's Information Systems Services Support Office explains the joint efforts of Marshall personnel that were required for planning and construction of the Center's new robot exhibit at the U.S. Space & Rocket Center. Built to attract a viewer's attention, the robot interacts with employees essential to the Center's team effort featured on a video back drop.

Three Marshall-Managed Experiments Fly Aboard Space Shuttle Discovery

by Bob Thompson

Three microgravity science experiments, managed by the Marshall Microgravity Research Program Office, launched June 2 aboard the Space Shuttle Discovery, as part of mission STS-91. This was the ninth and last planned U.S. flight to the Russian space station Mir and will return not only NASA astronaut Andrew Thomas, but some "frequent flyer" experiments, as well.

The three experiments include a series of tests designed to help researchers better understand the physical processes of fire — both in space and on Earth — for fire safety. Principal investigator for the experiment is Robert A. Altenkirch, professor and dean at Washington State University in Pullman, Wash.

*See **Experiments** on page 6*

Around Marshall

Marshall Receives EEO Award for Excellence

Marshall Center was recognized recently by FPMI Communications for the cooperation between its Equal Opportunity (EEO) and Human Resources (HR) offices.

The Center was chosen as first runner-up for the EEO/HR Best Practices Award acknowledging the unique and creative approaches used by Marshall's Equal Opportunity and Human Resources office. Accepting the award for Marshall at the EEO/HR Forum in Williamsburg, Va., were Equal Opportunity Director Charles Scales and Human Resources Director Danny Hightower.

Physics Seminars on TV Beginning June 15

Physics for the Third Millenium seminars will air on the Marshall Continual Learning Channel 14 beginning June 15. The seminars cover a wide range of subjects including worm holes and warp drives, physics of antimatter and breakthrough propulsion physics. The complete schedule is available on the Inside Marshall Web site at: http://inside/EODO/training/tvschedule.html

Mott, Associate Deputy Administrator, Technical, to Leave NASA

Mike Mott, NASA Associate Deputy Administrator (Technical), has announced he plans to leave NASA to join Boeing Space Transportation, Seal Beach, Calif., as vice president, Business Development.

Mott, one of the Agency's top three managers, has served the NASA Administrator since January 1994.

"Mike has been a valuable asset to NASA, and his contributions will be sorely missed," NASA Administrator Dan Goldin said. "We wish him the best of luck in his new position. It has been an honor to work with him."

NASA Forms Office in Russia; Prepares for International Space Station Operations

NASA has formed the Office of Human Space Flight Programs, Russia, to oversee the transition from the Phase One Shuttle-Mir program to the assembly and operation of the new International Space Station.

NASA astronaut Michael A. Baker will be NASA's lead representative to the Russian Space Agency and its contractors on operational issues as part of NASA's Human Exploration and Development of Space (HEDS) initiative. This places Russian liaison for all human space flight operations and initiatives under one office and consolidates preparations for the assembly of the International Space Station, including mission operations, crew training, logistics and technical liaison activities with Russian space organizations.

AIAA Honors Pearson with Holger Toftoy Award

Steve Pearson, chief of Marshall's Electromagnetics and Aerospace Environments Branch, recently received the Holger Toftoy Award for outstanding technical management in the fields of aeronautics and astronautics. The award was presented by the Alabama/Mississippi Section of the American Institute of Aeronautics and Astronautics (AIAA) during its annual Award Banquet at the Bevill Center.

Steve Pearson

Pearson's accomplishments include initiating and leading development of a tool to analyze the electromagnetic compatibility of numerous and complex components of the International Space Station and other NASA payloads.

In addition, he has led Marshall in the natural environments definition and project development support by assuring that space systems are designed and tested to withstand those environments.

Pearson chairs the NASA Space Environments and Effects Advisory Committee and is a member of several NASA working groups concerned with space environment interactions with space systems.

NASA Photo by Adeline Byford

Suggestion Earns Employee Cash Award

Marshall's Science and Engineering Director William E. Taylor presents a suggestion award to Patricia Edwards of Marshall's Astrionics Laboratory. She suggested purchasing parts directly from the manufacturer to cut down on delivery time and save money. Edwards' suggestion resulted in savings of $61,785. She received a cash award of $2,203.55.

Obituaries

Craighead, Willie, 75, Huntsville, died May 25. He retired from Marshall in 1974 where he worked as an aerospace engineering technician. He is survived by his wife Mary Craighead.

Marshall Employees Honored During Awards Ceremonies

Awards were presented Tuesday at the annual Marshall Center honors ceremonies recognizing civil service and contractor employees who have made exceptional contributions to the Center's mission and the nation's space program.

The honorees were recognized by NASA Associate Administrator for Space Flight Joseph Rothenberg and Acting Center Director Carolyn Griner.

Awards presented include the NASA Outstanding Leadership Medal, the NASA Exceptional Engineering Achievement Medal, the NASA Exceptional Service Medal, the NASA Exceptional Achievement Medal, the NASA Equal Employment Opportunity Medal, the NASA Public Service Medal, NASA Group Achievement Awards, Awards External to NASA, Presidential Rank Awards, Meritorious Executive Awards, NASA Certificates of Appreciation, Marshall Director's Commendation Certificates, Marshall Certificates of Appreciation, Marshall Group Achievement Awards, Research and Technology Awards, Technology Transfer Awards, Marshall Patent Awards and Marshall Inventor of the Year Awards.

> *"Marshall employees and their leadership made the Space Program what it is today."*
>
> **— Joseph Rothenberg**
> *Associate Administrator for the Office of Space Flight*

NASA Distinguished Service Medal

Alexander McCool, SA01

NASA Exceptional Engineering Achievement Medal

Ramona Cummings, ED63

NASA Outstanding Leadership Medal

Carolyn Griner, DA01

Rebecca McCaleb, AE01

Robert Schwinghamer, DA01

Jerry Smelser, SA31

NASA Exceptional Service Medal

Paul Allison, DA01

James Bilbro, EB51

Portia Dischinger, AI11

James Frees, CC01

Mary Guthrie, DA01

Robert Kapustka, EB12

Tomas Nesman, ED72

Talmage Reynolds, AA01

Robert Thom, EH13

> *"Today we recognize Marshall employees' outstanding contributions."*
>
> **— Carolyn Griner**
> *Acting Center Director*

Photos were not available for some award recipients. NASA Outstanding Leadership Medal: James Forney, AI51 retired. NASA Exceptional Service Medal: Judith Carr, EM31.

NASA Exceptional Achievement Medal


John Alexander, BK01


Allen Bacskay, EJ43

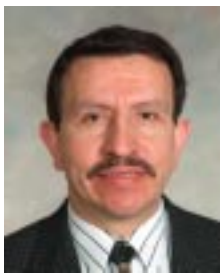

Brenda Bailey, EL33


John Cather, GP50


Cedreck Davis, AB31


Charlie Dill, Jr., EE61


James Downey, ES75


Luis Duarte, EE61


Joe Howell, Jr., PS05


Clyde Jones III, EH23


Joseph King, AB11


Lynne Lowery, CA20


Vernotto McMillan, LA40


Ann McNair, EO01


Terry Mitchell, PP02


George Newby, CL01

NASA Equal Employment Opportunity Medal


J. Wayne Littles, DA01
retired


Ronald Renfroe, EH23


David Schaefer, MG21


Ronald Schlagheck, MG01

MSFC Research and Technology Award


Thomas Delay, EH33


Richard Morey, Jr.,
EH33


Donald Gillies, ES75

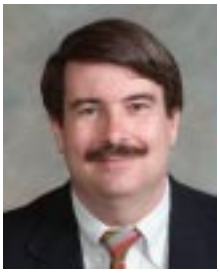

John Sharp, ED63


William Till, ED 63


Sandra Turner, CA01


Edwin Weaver, EH35

Photos were not available for some NASA Exceptional Achievement Medal recipients: Kirby Lawless III, EH23; Myron Pessin, EE31 retired and Rodger Romans, RA20.


Marc Pusey, ES76


Samuel Russell, EH13


William Witherow, ES76

MSFC Technology Transfer Award

Salvadore Caruso, EH42

Helen Cole, EB53

Eric Corder, EB53

Jeffrey Ding, EH23

Steven Gentz, EH22

A photo was not available for MSFC Technology Transfer Award recipient Joseph Hale, II, EO66.

MSFC Technology Transfer Award group recipients:

- Lockable Knee Brace Team
- General Motors Power Steering Pump Team
- Depainting Team

MSFC Patent Award

Timothy Dowling, ED53

David E. Howard, EB23

Seth Lawson, EH12

Jennifer Robinson, ED52

Stanley Smeltzer, III, ED52

Photos were not available for some MSFC Patent Award recipients: Daniel Carter, resigned; Angela Nolen, EH12 and Bruce Weddendorf, resigned.

NASA Public Service Medal

Glen Batts	Computer Sciences Corp.
Donald Brant	Teledyne Brown Engineering
Eugene Horak	Lockheed Martin Corp.
Leigh Hummer	AZ Technology

NASA Group Achievement Award

- Communications Architecture Team
- Crystal Growth Furnace Payload Team
- International Space Station Stage 10 Water Recovery Test Team
- Launch Deployment Assembly Design Team
- Microgravity Spacelab Laboratory-1 Mission Team
- NASA ADP Consolidation Center Team
- Passive Optical Sample Assembly Team
- Salt Water Activated Release Design and Development Team
- Solar X-ray Imager Project Team
- Spacelab Microgravity Science Laboratory Data Management and Video Operations Team
- Liquid Metal Diffusion Team

Awards External to NASA:

AIAA Aerodynamics Award
Werner Dahm, ED01

State of Alabama Engineering Hall of Fame
MSFC X-ray Calibration Facility

Association for Facilities Engineering Facilities Management Excellence Award
Deon Smith, AB31

National Space Club Eagle Manned Mission Success Award
Allen Bacskay, EJ43

Huntsville/Madison County 1998 Distinguished Leadership Award
Lynne Lowrey, CA20

1998 Federal Technology Service Awards
NASA Integrated Services Network Transition Team

Presidential Rank Awards Meritorious Executive Award
David Bates, BC01

Federal Environmental Engineer of the Year Honor Award
Robert Schwinghamer, DA01

Rotary National award for Space Achievement Foundation's Stellar Award
Alex McCool, SA01

NASA Certificates of Appreciation

Alexander, Reginald A.	PD21
Armstrong, Robert C., Jr.	PS01
Battle, Clarence S.	EO01
Beagley, Richard C.	USBI
Beranek, Richard G.	JA01
Buschmann, Sherry L.	RA01
Carrington, Connie K.	PD11
Cobb, Sharon D.	ES01
Crumbley, Christopher M.	JA01
Dollman, Thomas S.	CO30
Farmer, John E.	ED01
Fripp, Archibald L.	LRC
Harsh, Marcellus G., Jr.	EE31
Jones, Kathy U.	JA01
Kirchmyer, Robert H.	RA01
Krupp, Don R., Jr.	ED01
Lehoczky, Sandor L.	ES01
Lomas, James J.	ED01
Maples, Jane E.	GP01
Matsos, Helen C.	ES01
McClendon, Randy K.	JA01
Montgomery, Edward E., IV	PS01
Parrish, Keith J.	EL01
Peters, Palmer N.	ES01
Reed, Donald K.	USBI
Schultz, Manuel V.	EL01
Shaner, Thomas L.	JA01
Sledd, James D.	EL01
Smith, Dennis E.	RA01
Su, Ching-Hua	ES01
Sweigart, Michael L.	GP01
Szofran, Frank R.	ES01
Wallace, Bruce K.	EL01
West, Mark E.	ED01
Whipps, Patrick A.	EE31

MSFC Director's Commendation Certificate

Bennett, Mary Jane	CO01
Beshears, Ronald D.	EH01
Bryan, Donald M.	ED01
Butler, Byron W.	GP01
Caudle, Ronald J.	AB01
Champion, Robert H.	EP01
Clardy, Dennon J.	EJ42
Cornelius, Edwin D.	AB01
Davis, Wilda B.	RA01
Farmer, Jeffery T.	ED01
Gilbert, Paul A.	JA01
Graham, Jerry B.	EJ33
Hale, Joseph P., II	EO01
Hall, David K.	EB01
Heaton, Andrew F.	EO01
Hopper, James T.	RA01
Jeffreys, Beth R.	BC01
Jeter, Linda B.	MG01
Kittredge, Sheryl L.	ED01
Kos, Lawrence D.	PD31
Loose, Jack D.	EJ32

Continued on page 6

MSFC Director's Commendation Certificate
Continued from page 5

Lowery, Freida S.	EH01
Martin, David M.	SA01
McBrayer, Robert O.	MG01
McCaghren, Donnie R.	EL01
Mitchell, Michael L.	EH01
Neighbors, Bennett A.	RA01
Owens, Thomas N.	EH01
Pearson, Dallias S.	RA01
Purinton, Steven C.	EJ33
Reaves, John H.	EJ44
Roy, Steven E.	CO70
Shaw, Eric J.	PP01
Smiley, Carlos M.	GP01
SooHoo, Howard A.	EP01
Spearman, William S.	MG01
Terek, Joanne M.	EH01
Threet, Grady E., Jr.	PPD21
Vanhooser, Tereasa B.	JA01
Wright, Jerry L.	EH01
Wyckoff, James E.	AB01

MSFC Certificate of Appreciation

Anderson, Bobby	TBE
Boudreaux, Mark E.	MG01
Butler, Tom	MDA
Caldwell, John G.	EP01
Cheung, Yeun S.	TBE
Cloyd, Richard A.	ED01
Cramer, John H.	EP01
Curreri, Peter A.	ES01
Darby, Charles A.	PD11
Gaddis, Stephen W.	ED01
Hinkle, Kenneth M.	PD11
Huff, J. Michael	USBI
Jacks, Bennie A.	AB01
Jalbert, Lyle	UAH
Keller, Vernon W.	PS02
Long, David A.	EL01
Martin, James J.	EP01
McDougal, John M.	EJ33
McGriff, Gary S.	EL01
Moody, John R.	CSC
Murray, Michael W.	TRW
Nishimuta, Ena L.	PD21
Ortega, Samuel A.	EL01
Pagan, Boris A.	EP01
Prendergast, Maurice J.	ED01
Richards, Brenda K.	ED01
Roberson, Ricky	T-Tools
Robinson, Michael B.	ES01
Rogers, Mark N.	EO01
Schunk, Richard G.	ED01
Sheppard, James R.	EL01
Smith, Cynthia A.	BC01
Sullivan, Roy M.	ED01
Taormina, Larry K.	EB01
Thompson, Paul E.	ED01
Trout, Dawn H.	EL01
Vaughan, Robert E.	ED01
Vezina, Lawrence	CSA
Whitfield, Steven W.	EH01
Woods, Warren K.	EO01
Zimmerman, Curtis J.	PD31

MSFC Group Achievement Award

- 1997 SBIR Solicitation-NASA Strategic Plan Team
- Advanced Automated Directional Solidification Furnace United States Microgravity Payload-4 Mission Operations Team
- Advanced X-ray Astrophysics Facility Online System Development Team
- Automated Rendezvous and Capture Video Guidance Sensor Flight Experiment Team
- AXAF CCD Imaging Spectrometer Instrument Sunshade Modification Team
- Environmental Test Facility AXAF-1 Solar Panel Test Team
- Mir Glovebox Mission Support Team
- Modal Test Team
- NASA Integrated Services Network Team
- Optical Properties Monitor Instrument Team
- Shooting Star Experiment Structural Design Team
- Solar Thermal Propulsion Working Team
- Solid Rocket Booster Project Transition Team
- SSME Failure Investigation Board
- Test Stand 116 Operational Support Team
- Thermal Ion Dynamics Experiment Team
- X-33 Aerodynamics Database Wind Tunnel Test Team
- X-33 EIS Production Support Team
- X-33 EIS Team

MSFC Inventor of the Year

Lawson, Seth W.	EH01
Smeltzer, Stanley S., III	ED01

Experiments

Continued from page 1

Discovery also carries an experiment to test and measure a gas to better understand how substances change from liquid to vapor, how those changes affect resistance to electric current, and the ability to store and transfer heat. Principal investigator for this study is Dr. John Hegseth, a professor at the University of New Orleans, La.

The third is the Commercial Protein Crystal Growth experiment, and will be used to grow crystals of proteins associated with the flu and the life-threatening Chagas' disease, which affects more than 20 million people in Central and South America. Researchers expect to gain a better understanding of the form and function of the flu and Chagas' disease, leading to the development of better flu treatments and disease-fighting drugs. This experiment is sponsored by Dr. Larry DeLucas, director of the Center for Macromolecular Crystallography at the University of Alabama in Birmingham.

Discovery also will return several experiments to Earth from Mir. An X-ray detector will be returned that has been used to analyze the radiation that would interfere with the experiments on the International Space Station. DeLucas is also the principal investigator for this detector.

The experiment called ASTROCULTURE™, which was sent to Mir to grow wheat plants, is leading to better ways to experiment with plants and provide crews with oxygen, food and pure water in space habitats. ASTROCULTURE™ is sponsored by Dr. Ray Bula of the Wisconsin Center for Space Automation and Robotics, another NASA Commercial Space Center.

Also returning from Mir will be the Diffusion-Controlled Crystallization Apparatus for Microgravity experiment. Researchers hope to find larger and more ordered crystals to help them understand and counter the Herpes virus. Principal investigator of the study is Dr. Dan Carter, president of New Century Pharmaceuticals Inc. in Huntsville.

Another protein crystal growth experiment will be returned by Discovery. Housed in a container similar to a thermos bottle called a "dewar," post-flight analysis is expected to determine the best growing conditions for particular samples. The principal investigator is Dr. Alexander McPherson of the University of California-Irvine.

Also returning to Earth, an experiment called the bioreactor has grown blood vessel cells and breast cancer cells, which may lead to new medical advances for potential transplant operations. This investigation, known as COCULT, is led by Thomas Goodwin of Johnson Space Center in Houston, Texas, and professor Elliot Levine of the University of Wisconsin.

The Queen's University Experiment in Liquid Diffusion, sponsored by the Canadian Space Agency, will be returned and may lead to faster and better computer circuitry.

The Microgravity Isolation Mount will be returned from its service aboard Mir, where it has been used to isolate experiments from vibrations or to induce vibrations for mixing experiment samples. Dr. Franz Rosenberger of the University of Alabama in Huntsville is the principal investigator.

Upcoming Events

Registration Deadline Is Today for 'Take Our Children to Work' June 25

Today is the deadline for Marshall Center employees to register their children for the Center's "Take Our Children to Work Day" celebration set for Thursday, June 25.

This day, designed for employees' children in grades 3-12, offers children a firsthand look at their parents on the job.

Activities will include a Center tour and children will be given the opportunity to have their photographs taken. More information, along with registration and T-shirt order forms, are available on the "Inside Marshall" homepage at: http://inside.msfc.nasa.gov/ or at the Equal Opportunity Office in Bldg. 4200, room 220.

Enhanced Service Provides Database Access

by Paul Gill

NASA Technical Standards Program Coordinator

The NASA Technical Standards Program Office in the System Analysis and Integration Laboratory has recently obtained access to the new National Standards System Network's (NSSN) Enhanced Service for use by Marshall, other NASA Centers and the Jet Propulsion Laboratory (JPL) in Pasadena, Calif. This service can be directly accessed from NSSN's World Wide Web-based system at: http://www.nssn.org

In addition to the listing of world-wide standards products provided by their Basic Service, the Enhanced Service allows the Marshall user to download additional information on more than 100,000 worldwide standards products listed in the NSSN database. This enables Marshall engineers, and those of other Centers and JPL, to access a wide range of regional, national and international government, commercial and private standards products from a single source.

The NSSN is maintained by the American National Standards Institute in partnership with the Commerce Department's National Institute of Standards and Technology. This service will help reduce duplication of effort and standards products' development time, improve product quality and provide faster access to global standards products. It enhances NASA efforts to adopt non-government standards products into its NASA Preferred Technical Standards listing.

The ability to easily access the database enables NASA engineers to more effectively acquire and maintain information on technological developments and products applicable to new NASA projects. Details on the program and password access for the service are available on the NASA Technical Standards Program homepage at: http://standards.nasa.gov or by phoning 544-2557.

Insulin Crystals

Continued from page 1

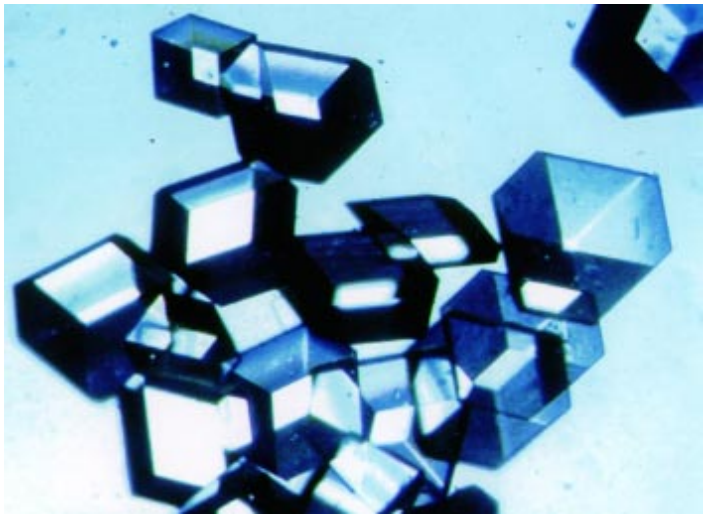
Marianna M. Long, associate director of the center located at the University of Alabama at Birmingham.

Insulin is one of the most important hormones in the human body because it regulates the body's blood sugar levels. In people with diabetes, insulin is not produced in sufficient quantity, nor regulated properly. This metabolism disorder impairs the body's ability to use digested food for growth and energy.

Current treatment is to inject the insulin hormone. However, the peaks and valleys in insulin levels can lead to serious health problems, including blindness, lack of circulation, limb amputations and kidney failure.

Like many chemicals in the body, the three-dimensional structure of insulin is extremely complex. The intricate, blueprint-like arrangement of atoms within the insulin molecule determines how well the hormone interacts within the body. When grown on the ground, insulin crystals do not grow as large or as ordered as researchers desire — obscuring the blueprint of the insulin molecules.

The center in Birmingham is one of NASA's 10 Commercial Space Centers managed by the Space Product Development Office within the Microgravity Research Program Office at Marshall. Each center represents a NASA partnership with industry and academia, pursuing product-oriented research in areas such as biotechnology, agriculture and materials. Unique research opportunities of the space environment are made available to encourage private industries to exploit the benefits of space-based research to develop new products or services.



Through space research, Marshall scientists have grown the largest insulin crystals ever studied. From these large crystals, researchers are gaining a clearer vision of insulin's vital form and function — leading to better treatments for diabetic patients.

Marshall research has furthered the understanding of many diseases, including AIDS, heart disease, cancer, respiratory syncytial virus, sickle cell anemia, hepatitis and rheumatoid arthritis. More information about Marshall's Space Products Development Office is available on the Web at: http://microgravity.msfc.nasa.gov/MICROGRAVITY/SPD.html

Employee Ads

Miscellaneous

★ Cedar chest, $50; pontoon boat cover, $50; Ray Jefferson marine radio, $60. 837-5782
★ Swing set, alum. w/slide, $100 o.b.o. 233-7869
★ Murray riding lawnmower, 36", 15hp, $350. 971-2071
★ Aquarium, 29-gal. w/pump & accesories, $30. 881-0883
★ Ping pong table, $45; electric stovetop 20" x 35" w/down-draft ventilation, $95. 882-0546
★ Goldwin AVDP XL 260cc driver, regular shaft, 11 degree, $199. 971-9710
★ Sewing machine, $25; Panasonic upright vacuum cleaner, $25. 882-9417
★ Graber car-top mounted bike rack, holds three bicycles, $50. 534-8961
★ Power-bilt driver, three-wood, $15 combined, golf balls, $ .25 each. 881-8953
★ Beanie Babies, retired, commons, teenies. 828-9651
★ Power attic roof fan, thermo control, $20. 881-7953
★ German schrank wall cabinet, $900. 830-8339
★ Driver Ti Bubble 2, 9.5 degree loft, S-90, $240; 7W Bubble 2, R-80, $140. 350-6477
★ GE washer & dryer, harvest gold, will sell separate, $175; Whirlpool undercounter dishwasher, $65. 881-6040
★ Children's play kitchen center. 837-6838
★ Baby bed, Jenny Lind, wood, $30; Little Tykes barnyard, $45; Sega Genesis CD, 4 games, $65. 837-6109
★ Longaberger baskets: 25th Anniv., 1997 Christmas, 1997 Petunia and 1997 pewter ornaments, best offer. 653-4266

Vehicles

★ 1996 Chrysler Town & Country LXi mini van, leather, 48K miles, $20,500. 464-9271
★ 1996 Pontiac Trans seven-passenger sport van, PW/PL, $12,500. 830-8339
★ 1995 Villager LS, 42K miles, leather captain's seats, most options. $14,500. 880-6792
★ 1995 Mercury Cougar, V8, ABS, traction assist, keyless/remote entry, 38K miles, $10,500. 721-3945
★ 1995 Mercury Mystique, AC/PW, $9,999; 1994 Nissan pickup, $6,500. 851-7843
★ 1995 Gulfstream 38' luxury motor coach, Spartan chassis, Cummins Diesel engine, Allison transmission, $125,000. 350-3784
★ 1995 Saturn, 2-dr., black/gold w/beige leather interior, 65K miles. 232-8555
★ 1994 Mustang Cobra, black/black, new tires, 5-spd., 22K miles, 726-2529
★ 1993 Ford conversion van 5L V-8, AT/TV/VCP, cabinets, sofa, 79K miles, $12,000. 882-1166
★ 1993 Dodge Grand Caravan ES, 48K miles, extended warranty. 773-2289
★ 1991 Acura Legend L, rosewood, automatic, rear spoiler, 80K miles, $10,500. 880-8008
★ 1990 Volkswagen Corrado, 5-spd., black, sun roof, ABS brakes, 93K miles, $5,000. 881-7096
★ 1989 Astro cargo van, $2,900; 1986 Mazda extended cab pickup available June 30, $1,500. 534-0608
★ 1988 Chevrolet Cavalier, 2 dr., AT/AC, radio/tape, gray $1,750. 837-1191
★ 1986 300 ZX, 5-spd., 130K miles, $2,995. 881-1718
★ 1985 Mercedes 300D turbo, 4-dr. sedan, forest green, $7,150. (205) 461-4816
★ Suzuki GS-750 motorcycle, $1,500. 971-2071

Wanted

★ Futon sofa. 881-0883

Found

★ Knife at Bldg. 4202. Call 4-4758 to identify.
★ Keys at Marshall picnic area. Call 4-4758 to identify.
★ Baby carriage at Bldg. 4200. Call 4-4758 to identify.
★ Boat seat at Patton & Buxton Roads. Call 4-4758 to identify.

Free

★ Homemade sandbox with cover. 830-9156
★ Free firewood, cut and haul yourself, felled trees. 828-9651

Center Announcements

☛ ***NARFE —*** The National Association of Retired Federal Employees (NARFE) will meet Sat., June 13 at the Senior Center on Drake Avenue. The meeting will feature fire protection equipment and guidelines. Refreshments will be served at 9:30 a.m. with the program at 10 a.m. For more information, call 837-0382 or 881-3168.

☛ ***Blue Cross/Blue Shield —*** A representative from Blue Cross/Blue Shield will be at Marshall 9-11 a.m. on Tues., June 16 in Bldg. 4200, room 324. Questions and claim concerns will be addressed.

☛ ***MESA —*** The Marshall Engineers & Scientists Association (MESA), IFPTE Local 27, will meet at 11:30 a.m. on Thurs., June 18 at the northeast end of Bldg. 4471, room C-105.

☛ ***MARS Fishing Club —*** The results of the Elk River tournament on May 23 are: first place — Alex Rawleigh and Ricky Pickett with seven fish weighing 8.01 pounds; second place — Rob Butler and Josh Butler with seven fish weighing 7.70 pounds; and third place — Ken Anthony and Charles Kilgore with seven fish weighing 7.10 pounds. Big fish honors went to Rob Butler with a 1.59 pound bass. The next tournament is set for June 13 at Goosepond. The club would like to have more participation from Marshall employees, contractors and family members. A boat and experience is not required. For more information call John Pea at 544-8437; Don McQueen at 544-9073 or Charlie Nola at 544-6367.

☛ ***Latin Dance —*** The Huntsville Spanish Club is sponsoring a dance on Sat., June 13th at the Visitation Parish Hall on Lincoln Street. The dance will benefit the UAH Hispanic Scholarship Fund. For tickets and information, call Jerry Ortiz at 536-3948 or Juan Mendoza at 880-7511.

☛ ***Toastmasters —*** The NASA Lunar Nooners Toastmasters Club will meet on Tues., June 16 at 11:30 a.m. in the 4610 cafeteria conference room. All Marshall employees, contractors and friends are invited. For information, call Debbie Hagar at 539-4499 or Lee Johns at 544-5142.

Job Opportunities

Reassignment Bulletin 98-20-CV, AST, Aerospace Vehicle Design and Mission Analysis, GS-861-12/13 (2 vacancies), S&E, Structures & Dynamics Laboratory, Guidance and Control Systems Division, Flight Mechanics, Guidance, Navigation & Control Systems Branch. Closes June 12.

Reassignment Bulletin 98-21-CV, AST, Technical Management, GS-801-12/13, S&E, Structures & Dynamics Laboratory. Closes June 12.

CPP 98-47-CL, Supv. AST, Structural Materials, GS-806-15, Materials & Processes Laboratory, Non-Metallic Materials & Processes Division. Closes today.

CPP 98-48-CL, AST, Basic Properties of Materials, GS-1310-14, S&E, Materials & Processes Lab., Physical Science & Environmental Effects Branch. Closes today.

CPP 98-52-CP, AST, Aerospace Flight Systems, GS-861-14, S&E, Systems Analysis & Integration Lab., Systems Engineering Division, Systems Definition & Integration Branch. Closes today.

CPP 98-59-PL, Supv. AST, Aerospace Vehicle Design & Mission Analysis, GS-861-15, S&E, Mission Operations Laboratory, Mission Planning Division. Closes June 15.

CPP 98-64-DC, Supv. AST, Navigation, Guidance & Control Systems, GS-861-15, S&E, Astrionics Laboratory, Instrumentation & Control Division. Closes today.

CPP 98-65-DC, AST, Data Systems, GS-854-14, S&E, Astrionics Laboratory, Software & Simulation Division, Software Management & Test Branch. Closing extended to June 12.

CPP 98-67-DC, Program Analyst, GS-343-13 (2 vacancies), Microgravity Research Program Office, Program Planning & Control Office. Closing extended to June 17.

CPP 98-71-CP, AST, Aerospace Flight Systems, GS-861-14, S&E, Systems Analysis & Integration Laboratory, Technical Staff Office. Closes June 19.

CPP 98-72-CP, Supv. AST, Aerospace Flight Systems, GS-861-14, S&E, Space Sciences Laboratory, Science Systems Division, Experiment Development Branch. Closing extended to June 12.

CPP 98-74-JB, Legislative Affairs Specialist, GS-301-13, Customer & Employee Relations Directorate, Government & Community Relations Office. Closes June 11.

CPP 98-82-CV, Executive Assistant, GS-301-9/11/12, Office of the Associate Director. Opens June 9 and closes June 16.

MARSHALL STAR

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