

**Annual
Montgomery
Area
Science
Fair**

 **Science**
MONTGOMERY
March 11, 12, & 13, 2005

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2005  **Science** Fair Schedule
MONTGOMERY

www.ScienceMONTGOMERY.org

Friday, March 11, 2005

6 PM - 9 PM Student Registration: Students register and set-up display boards in Building #6 at the Montgomery County Fairgrounds, Gaithersburg, MD.

Saturday, March 12, 2005

8 AM - 12 Noon Category Judges Preview Period

12 Noon - 5 PM Student Interviews by Category, Grand Award and Special Award Judges

6 PM - 9 PM Open House for the General Public, in Building #6, Montgomery County Fairgrounds, Gaithersburg, MD

Sunday, March 13, 2005

12 Noon - 2 PM Open House for the General Public; Student Projects on exhibit in Building #6, Montgomery County Fairgrounds, Gaithersburg, MD

2 PM Awards Ceremony at the Gaithersburg High School Auditorium, Gaithersburg, MD

4 PM - 6 PM Project Break Down: Students dismantle projects

(Any projects not removed by 6 pm will be discarded.)



MONTGOMERY AREA SCIENCE FAIR ASSOCIATION

ScienceMONTGOMERY, one of the largest science fairs in the US, welcomes you to a celebration of Science as we return for an exciting 49th year. *ScienceMONTGOMERY* is dedicated to encouraging and promoting our youths' interest in science, encouraging scientific activities, and bringing together scientists, educators, students, parents, and friends of science. *ScienceMONTGOMERY* awards over \$20,000 in prizes for outstanding projects in the Junior and Senior Divisions of the Life Science and Physical Science categories, and for special awards provided by over 50 local and national groups. A distinguished panel of more than 200 volunteer judges select the Category and Special Awards winners. These judges, who represent the area's businesses, scientific, professional, educational, and Government communities, evaluate student projects and determine awards, which range from cash to scholarships, trips, bonds, banquets, certificates, medals, merchandise and books.

ScienceMONTGOMERY is affiliated with the Intel International Science and Engineering Fair (ISEF). We follow the Intel ISEF rules and regulations to assure the safest scientific research methods. Four Grand Prize winning entrants in the Senior Division will be funded (and chaperoned) to the Intel International Science and Engineering Fair 2004, held in Phoenix, AZ this year, where they will compete against winners from the United States and over 38 foreign countries. By participating in the Intel ISEF, students become eligible for over three million dollars in scholarships, tuition grants, scientific field trips, summer internships and other awards. Last year over 400 students in the Montgomery County area competed in the local Fair and 2 of 5 grand awardees went on to become 1st and 4th place category winners at the INTEL-ISEF in Portland, OR.

An outstanding group of sponsors provide financial and "in kind" support to *ScienceMONTGOMERY* and the Montgomery Area Science Fair. Again this year, Spectrum Science Communications donated their expertise to our publicity and fund raising campaign; Montgomery County Public Schools has provided key staff and services; and Doug Duncan, our Montgomery County Executive, continues to support our efforts. We have 2 generous Au (gold) level sponsors this year. **Intelsat**, who is a 2nd year Au-level sponsor, is joined by **MedImmune, Inc.** We are most appreciative of their contributions and thank these sponsors and all the other sponsoring organizations and individuals listed in this program, who have continued to support our student scientists in this 49th year of the Montgomery Area Science Fair

ScienceMONTGOMERY congratulates all the student scientists who prepared projects for the 2005 Science Fair and wishes them a happy and productive future in science. We also extend our sincere appreciation to the judges, and other volunteers who continue to make our celebration of science a super nova event! Particular thanks go to our keynote speaker, Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases at the National Institutes of Health, who has taken time from his busy schedule to send a message of inspiration and hope to our young future scientists. We hope that you will enjoy the Fair as much as we have enjoyed preparing for it.

Andrea Sawczuk, D.D.S., Ph.D., President

Pepper D. Buckley, Ph.D., Fair Director

Montgomery Area Science Fair Association

www.ScienceMONTGOMERY.org



OFFICE OF THE COUNTY EXECUTIVE
ROCKVILLE, MARYLAND 20850

Douglas M. Duncan
County Executive

February 18, 2005

Pepper D. Buckley, Ph.D.
Fair Director
Montgomery Area Science Fair Association
ScienceMONTGOMERY
11516 Dahlia Terrace
Potomac, Maryland 20854-1174

Dear Pepper:

I am again pleased to support the efforts of *ScienceMONTGOMERY*, the countywide Science Fair of the Montgomery Area Science Fair Association, which attracts more than 1,500 students from the Montgomery County public and private schools each year. I support the mission of *ScienceMONTGOMERY* to advance and celebrate outstanding performance in science education in our community.

Montgomery County's extraordinary young people who show early promise through their inventiveness, rigor, curiosity, imagination, and creativity in the physical and life sciences represent our employees, leaders, teachers, researchers, and scientists of tomorrow. I applaud all Montgomery County businesses who support *ScienceMONTGOMERY*, investing in today's youth by recognizing the promise of their talents and achievements.

Sincerely,

Douglas M. Duncan
County Executive





2005  **Science** Sponsors
MONTGOMERY

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Cu (\$500-\$999)	BB&T Johns Hopkins University HeadsUP Program National Institutes of Health Otsuka America Pharmaceuticals, Inc. QIAGEN Sciences Inc. Technical Resources International, Inc. The Institute for Genomic Research	
Fe (\$150-\$499)	American Astronomical Society America Online CHIESI Pharmaceuticals, Inc. Gem, Lapidary and Mineral Society of Montgomery County GENVEC Inc. Comcast Hughes Network Systems Kirkegaard & Perry Laboratories, Inc. OncoImmunitin, Inc. Quality Suites & Sleep Inn Sandy Spring Bank ViaSat/COMSAT	



MONTGOMERY AREA SCIENCE FAIR ASSOCIATION

49th Montgomery Area Science Fairs – 2005
Montgomery County Fairgrounds, Gaithersburg, MD

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Fair Director: Dr. Pepper D. Buckley

Awards Ceremony MC: Dr. William Krayer, VIP K-16 Campus Project Director, Montgomery College

Safety Committee: Lawrence Bricker, Montgomery County Public Schools

Persons interested in joining the 2006 ScienceMONTGOMERY Board should contact
Dr. Andrea Sawczuk at SciMONT@aol.com



AWARDS PROGRAM

2:00 P.M.

Sunday, March 13, 2005

Gaithersburg High School Auditorium

Opening of Awards Program

Andrea Sawczuk, D.D.S., Ph.D.
President, Montgomery Area Science Fair Assoc.

Keynote Address:

Anthony Fauci, M.D., Director
National Institute of Allergy & Infectious Diseases
National Institutes of Health

Congratulations to Student Scientists:

Kevin Mulloy, President, **Intelsat**
Toni Stiefel, Sr.Mgr., Community Relations &
Employee Communications, **MedImmune**
John Seng, President,
Spectrum Science Communications

Presentation of Special Awards:

William Kraye, Ph. D.
Pepper D. Buckley, Ph.D., Fair Director

**Thank You to Teachers
& Project Sponsors:**

Michael Szesze, Program Supervisor for Science
Montgomery County Public Schools

Presentation of Senior Category Awards:

Life Sciences

Physical Sciences

William Kraye, Andrea Sawczuk
Toni Steifel
Kevin Mulloy

Presentation of Junior Awards:

Life Sciences

Physical Sciences

William Kraye, Pepper D. Buckley
Toni Steifel
Kevin Mulloy

Presentation of Grand Awards:

Andrea Sawczuk , Pepper D. Buckley

Thank You & Adjournment:

Laura Lee Johnson, Ph.D.
President-Elect, ScienceMONTGOMERY



Organizations Offering Special Awards

American Astronautical Society
American Industrial Hygiene Association
American Institute of Aeronautics & Astronautics
American Meteorological Society
American Nuclear Society
American Psychological Association & Teachers of Psychology in Secondary Schools
American Society of Engineers of Indian Origin, National Capital Chapter
American Society of Mechanical Engineers
American Society of Naval Engineers, Nat'l Committee on Environmental Engineering
American Society of Safety Engineers - National Capital Chapter
ASM International, Washington DC Chapter
Association for Women Geoscientists
Association of Practicing Psychologists of Montgomery and Prince Georges Counties
Association of Scientists & Engineers of the Naval Sea System Command
Central Intelligence Agency
Commissioned Officers Association of the U.S. Public Health Service
Discovery Young Scientist Challenge
Eastman Kodak Company
Energy & Air Quality Advisory Committee of Montgomery County
Federal Water Quality Association
Gem, Lapidary & Mineral Society of Montgomery County Maryland, Inc.
George Washington University Engineering Alumni Association
Herbert Hoover Presidential Library Association
Institute of Electrical and Electronics Engineers
Institute of Food Technologists - DC Section
Intel Excellence in Computer Science Award
International Society for Optical Engineering
MedImmune
Montgomery Bird Club, a Chapter of Maryland Ornithological Society
MU Alpha Theta
National Association of Biology Teachers
National Society of Professional Engineers
National Space Club
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Optical Society of America - National Capital Section
Ricoh Corporation
Sigma Xi - FDA Chapter
Sigma Xi - NIST Chapter
Society for In Vitro Biology
Society for Mining, Metallurgy and Exploration, Inc.
Spectrum Science Communications
Towson University
U.S. Air Force
U.S. Army Research Office
U.S. Metric Association
U.S. Nuclear Regulatory Commission
Washington Statistical Society
Water Environment Federation Stockholm Junior Water Prize
West Montgomery County Citizens Association
Yale Science & Engineering Association, Inc.



Category and Grand Awards Judges

Mr. James Acklin	
Dr. Rajeev Agarwal	National Institutes of Health
Ms. Mary Anderson	Digene Corp.
Ms. Susan Audino	Natl Inst. of Standards and Technology
Dr. John Bader	
Dr. Kate Baldwin	Howard University College of Medicine
Dr. Inna Belfer	National Institutes of Health
Dr. Lokesh Bhattacharyya	United States Pharmacopeia
Dr. Kiran Bhutani	Catholic University
Dr. David W. Bonnell	Natl Inst. of Standards and Technology - retired
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Dr. Thomas Brody	NINDS, National Institutes of Health
Dr. Jay Buckley	JLB Associates, Ltd.
Dr. Pepper Buckley	Psychologist, Pvt. Practice
Dr. Beverly Celotta	Child and Family Practice
Dr. Robert Celotta	Natl Inst. of Standards and Technology
Dr. Wei-Mei Ching	Naval Medical Research Center
Mr. Jeffery Cohen	University of Maryland
Mr. John Craig	US Nuclear Regulatory Commission
Dr. Hall Crannell	Catholic University
Dr. Nicholas Dagalakis	National Inst. of Standards and Technology
Mr. George Daniello	
Dr. Mathew Daniels	National Institutes of Health
Dr. Mrinal Dewanjee	Applied Molecular Probes, Inc.
Ms. Barbara Fahey	National Institutes of Health
Dr. Bryan Fantie	American University
Dr. Chad Fertig	Natl Inst. of Standards and Technology
Ms. Christiana Fogg	NIAID/National Institutes of Health
Dr. Christine Foster	National Institutes of Health
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Ms. Carolyn Garvey	Univ. of Maryland
Dr. Dennis Glanzman	National Institutes of Health
Ms. Patricia Gonzales	Univ. of Maryland
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Dr. Jeffery Klauda	National Institutes of Health
Dr. Shiva Krupa	
Miss Laura Liefer	National Human Genome Research Institute, NIH
Ms. Susan Lutz	University of Maryland
Dr. Cathy Manner	



Category and Grand Awards Judges

Dr. Gerald Marti	Food and Drug Administration
Mr. Stephen Mason	Johns Hopkins University
Dr. George Mattingly	Natl Inst. of Standards and Technology
Dr. Susan McKarns	National Institutes of Health
Ms. Diane Milenic	NCI, National Institutes of Health
Dr. Lee Moore	NCI, National Institutes of Health
Dr. Bjorn Mysen	Carnegie Institution of Washington
Dr. Nicolai Nygaard	Natl Inst. of Standards and Technology
Dr. Sriram Padmanahan	
Dr. Gouri Pandey	NIAMS, National Institutes of Health
Dr. Laura Picraux	Natl Inst. of Standards and Technology
Dr. Josh Pomeroy	Natl Inst. of Standards and Technology
Dr. Andrea Sawczuk	National Institutes of Health-NINDS
Dr. Michael Schultz	Natl Inst. of Standards and Technology
Mr. Daniel Shapiro	ASME
Dr. Jennifer Shen	National Cancer Institute
Mr. Donald Silverstein	Blake Real Estate, Inc./Real Estate & Construction
Dr. Aman Singh	National Institutes of Health
Dr. Amber Steele	Food & Drug Administration, CBER
Dr. Bob Vaughan	Hospital Consultant (retired)
Ms. Ana Veiga	National Institutes of Health
Dr. Teresa Washington	NIH/Johns Hopkins Bayview Medical Center
Dr. Charise White	National Institutes of Health
Mr. Joel Widenor	Earth Satellite Corporation
Ms. Cecilia Yin	HHS/HRSA
Dr. Min Zhou	National Institutes of Health



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Participating Schools-2005

School

Abbreviation

Benjamin Banneker Middle School	BAM
Bethesda-Chevy Chase High School	BCH
Cabin John Middle School	CJM
Charles E. Smith Jewish Day School	JDS
Col Zadok Magruder High School	MGH
Earl B. Wood Middle School	EWM
Francis Scott Key Middle School	FKM
Gaithersburg High School	GBH
Gaithersburg Middle School	GBM
Hebrew Day Institute	HDI
Herbert Hoover Middle School	HHM
Holton-Arms School	HOA
Home Schooled	HS
Montgomery Blair High School	BLH
Muslim Community School	MCS
Newport Mill Middle School	NMM
North Bethesda Middle School	NBM
Quince Orchard High School	QOH
Redland Middle School	RLM
Richard Montgomery High School	RMH
Robert Frost Middle School	RFM
Roberto Clemente Middle School	RCM
Seneca Valley High School	SVH
Sherwood High School	SWH
Sligo Middle School	SLM
St. Andrew Apostle School	SAA
St. Catherine Laboure School	SCL
Takoma Park Middle School	TPM
Thomas S. Wootton High School	WOH
Thomas W. Pyle Middle School	PYM
Walt Whitman High School	WWH
White Oak Middle School	WOM
William H. Farquhar Middle School	FQM
Winston Churchill High School	CHH

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What will you see?

I first saw

the Statue of Liberty

from the ship.

What's that?

a man asked.

My mother whispered

the answer.

"Home."



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Exhibits in the Junior Division, Grades 6-8

Project	Title of Project	Exhibitor's Name	School
Behavioral and Social Sciences			
JL101	Is a Picture Worth a Thousand Words?	Laura Avigan	HDI
JL102	How Did You Do That?	Tiffany Chang	TPM
JL103	Do Science Fair Projects Really Matter? And How About Those SUVs?	Orly Farber	JDS
JL104	The Stroop Test: A Study on Visual Selective Attention Through Age and Gender	Rutvij Pandya	TPM
JL105	Which Font Helps the Human Brain to Memorize Best?	Tripti Soni	RCM
Biochemistry			
JL201	DNA in Fruit	Eric Alexander	EWM
JL202	The Skinny About Fat	Sarah Bolmer	CJM
JL203	Keeping It Fresh	Angelica Eng	FKM
JL204	Effects of Different Peptides Derived from Pathogens on PBMCs Using ELISPOT Assay	Sneha Kannan	TPM
JL205	The Effects of Temperature on the Reaction Rate of Denaturing Proteins in Egg Whites	Elizabeth So	TPM
Botany			
JL301	Effects of Ionizing Radiation on the Growth and Germination of Zinnias	Nathalie Deroin	RCM
JL302	Do Cicadas Help Crops?	Maeve Foley	HOA
JL303	The Effect of Liquid and Powdered Detergents on the Amount of DNA Extracted From Wheat Germ	Priya Krishnan	HOA
JL304	Do Human Multi-mineral Supplements Benefit Pea Plants?	Lyla Lawless	HS
JL305	Hormones...Not Just for People: The Effect of Ethylene on the Ripening of Bananas	Brogan Murphy	SCL
JL306	Which Do Beans Prefer - Basic or Acidic Water?	Alison Post	RLM
JL307	Salt Concentrations in Plant Seeds	Ankit Sood	TPM
JL308	The Effect of Kinetin and Indoleacetic Acid on Pea Plants	Lina Valivullah	TPM
JL309	How Different Ratios of Cytokinins to Auxins Affect the Growth of the Pea Plant (<i>Pisum sativum</i>)	Zaheer Valivullah	TPM
JL310	Effect Acid Rain has on Plant Growth	Josh Weil	SLM
JL311	Thirsty? Have an Apple!	Ilana Weisz	JDS
JL312	The Effects of Acidity of Soil on the Growth of Garlic	Conway Xu	TPM
Chemistry			
JP401	To Have Vitamin C, or Not to Have Vitamin C	Emanuel Anagnostiadis	CJM
JP402	Testing for Vitamin C	Andrew Badger	EWM



THERE COMES A POINT WHEN KIDS FORGET THEY'RE LEARNING.
THEIR IMAGINATIONS IGNITE. AND THAT MOMENT
STAYS WITH THEM FOREVER.

Sparkling a young person's natural curiosity. Encouraging their interest in math and science. These are the goals of Lockheed Martin's educational outreach to primary and secondary schools across America. With programs like Space Day, where kids can build and launch water rockets — and learn that physics can be fun. We also award grants to colleges and universities that demonstrate excellence in engineering and computer science programs. We're investing in education because we recognize it is essential to the future of our country. And because it's easier for students to reach for the stars when they have a solid launch pad.

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Project	Title of Project	Exhibitor's Name	School
JP403	Shocking Developments: Does Adding Substances to Water Make it a Better Electrical Conductor?	Ryan Biesecker	NBM
JP404	How Much Cheese per Noodle?	Kelsey Edge	BAM
JP405	Is There Any Liquid that Works Better than Anti-freeze?	Carlos Eyzaguirre	NMM
JP406	Does Rain Water Affect How Healthy a Body of Water Is?	Kate Frost	RCM
JP407	Which Tape will Work the Best?	Ryan Goodman	BAM
JP408	The Effect of Electrolyte Concentration on Alkaline Fuel Cell Output	Jonathan Gootenberg	TPM
JP409	Sugar	Andre Gregory	BAM
JP410	Which Soda has the Most Carbonation?	Katrina Hauprich	BAM
JP411	Lady M's Adventure of Mighty Burning	Matauka Ikachana	SCL
JP412	Food Products Don't Always Weigh What Their Labels Say...or do They?	Stuart Kushner	HHM
JP413	The Effect of Yeast on Bread Size	Elisa Mathon	EWM
JP414	Comparing Brands of Water	Ahmed Naqvi	BAM
JP415	The Effect of Temperature on the Density of Air	Kevin O'Brien	EWM
JP416	Time for Fizz to Settle vs. Amount of Sugar	Youjong Oh	EWM
JP417	Tide vs. Purex, Hot Water vs. Cold	Sarah Sokolow	HDI
JP418	Testing Grades of Gasoline	Philip Termini	SLM
JP419	How Crystals Form in a Solution	Daniel Toretsky	SLM
JP420	Do You Have a Headache?	Ashley Wilson	RCM
JP421	Got Milk? Get Cookies!	John Wright	BAM
Computer Science			
JP501	Which Path Finding Algorithm Can Best Improve Computer Chess Engine Strategies?	Chiranjith Das	TPM
JP502	Which Wi-Fi LAN Parameter Settings Achieve Highest Performance In A Noisy Environment?	Pranav Gokhale	RCM
JP503	Optimizing Structural Integrity of Rigid Block Structures against a Constant Force with a Genetic Algorithm	Akimitsu Hogge	TPM
JP504	Evaluating Computer Search Algorithms for Artificial Intelligence Applications	Ansh Johri	TPM
JP505	Speed Comparison Between Visual Basic, C++, Java, and True Basic in Bubble Sorts-And-Do Loops	Eric Kuang	TPM
JP506	Development of an Algorithm for a AROBOT to Follow a Wall.	A. Yashodhara Rao	PYM
Earth Science			
JP601	How does the Color of Light Affect the Growth of Plants	Haley Carpenter	FKM
JP602	Crystals with Style	Jacob Harris	HHM
JP603	How does Light Affect Growth on Plants	Gloria Nhan	FKM
JP604	How Fast Can an Ice Cube Melt in Different Temperatures?	Daniel Perez	EWM
JP605	Impact of Carbon-dioxide on Global Temperature Changes	Natarajan Poorna	TPM



Project	Title of Project	Exhibitor's Name	School
JP606	Does Acid Rain Help or Hurt?	Caitlin Sperling	EWM
JP607	Mary, Mary, Quite Contrary, How Does Your Garden Grow?	Mercedes Valero	HHM
Engineering			
JP701	Catapult	David Bellomy	FKM
JP702	Angle of Attack and Time to Height	Christopher Bodine	TPM
JP703	Comparison of Different Insulations	Abigail Carras	HOA
JP704	Reducing Highway Traffic Noise	Deepa Chellappa	TPM
JP705	Cards Support Cards	Eric Chen	HHM
JP706	Fiber Optics: Ready for Home Digital Entertainment?	Ramita Dewan	TPM
JP707	Fragile: Do Not Drop	Sarah Fechter	HHM
JP708	Which Brand of Battery Lasts the Longest?	Ishan Khetarpal	RCM
JP709	The Effects of Battery Configuration on an Electric Motor	Christopher Leung	WOM
JP710	Sails Away	Nicholas Loeb	TPM
JP711	The Effect of Changing the Slope of an Arch on the Arch's Weight Bearing Capacity.	Joseph Lynch	SLM
JP712	Dams	Georgia Maclean	SLM
JP713	The Secret Life of Mud	Sikandar Porter-Gill	GBM

"Nothing has such power to broaden the mind as the ability to investigate systematically and truly all that comes under your observation in life."

— Marcus Aurelius

QIAGEN congratulates all of Montgomery County's young scientists who participated in **ScienceMONTGOMERY.**



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Project	Title of Project	Exhibitor's Name	School
JP714	Which Bridge is the Strongest?	Zachary Roth	HDI
JP715	Are You Spending too Much Money on Gasoline ?	Danielle Tafuri	EWM
JP716	Which Bridge Can Hold the Most Weight, Arch or Truss?	Gary Williams	SLM

Environmental Sciences (Life)

JL801	Which Alternative Energy Source - Hydro, Wind, or Solar- Uses up the Least Resources?	Brandon Berry	RCM
JL802	The Study of Fresh Water Contamination	Mohammad Manzari	HHM
JL803	Wind and Speed of Evaporation	Valeria Nogales	EWM
JL804	The Effects of Acid Rain on the Germination of the Pea Plant	Ethan Wang	TPM

Environmental Sciences (Physical)

JP851	Does the Density of Wood Affect the Amount of Time a Piece of Wood Burns?	Christopher Brown	EWM
JP852	Thinking about Saving Money on Cheap Spray Paint? Think Again!!	James Higgins	EWM
JP853	Acid Rain in Maryland	Julia Miller	EWM
JP854	What Household Items are Best for Lubricating Metal?	Elliot Shein	EWM
JP855	How Does Density Affect the Burning Rate of Wood?	Leah Shein	EWM
JP856	The Effect of Different Ethanol-Gasoline Blends on Carbon Monoxide Emissions from a Lawn Mower	William L. Shepherdson	TPM
JP857	Runaway Runoff: Which Rain Garden Produces The Most Storm Water Runoff	Molly Wallace	FKM
JP858	Who You Gonna Call? Stain Busters	Molly White	SCL

Mathematics

JP901	Indefinitely Growing Self-Avoiding Walks on a Two-Dimensional Square Lattice	Michael Cohen	TPM
JP902	Fractals in the Stock Market and in Nature	Andrew Das Sarma	TPM
JP903	Winning with Heads... or Tails?	Andrew Gallagher	RCM
JP904	Further Investigations of the Algebraic Structure of Decimal Expansions as a Function of Base	Jordan Hirsh	TPM



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GENVEC



Project	Title of Project	Exhibitor's Name	School
JP905	The Chaos Game	Anand Oza	TPM
JP906	The Golden Ratio...in Plants?	Prashanth Venkataram	CJM

Medicine and Health

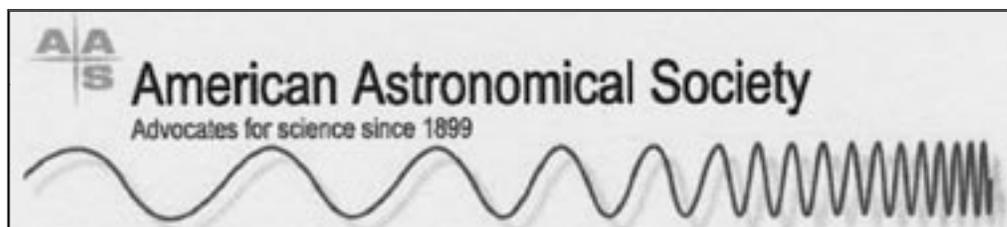
JL1001	Understanding Color Blindness With the Help of Prisms and a Black and White Camera	Allison Arai	TPM
JL1002	The Best Carwash for your Teeth	Camille Bouvet	NBM
JL1003	Soda's Effect on Teeth	Justin Chang	TPM
JL1004	Which Fat is Broken Down Faster; Animal or Plant?	Rohini Choudhuri	CJM
JL1005	Stinky, Smelly, Sweaty Feet!	Sophia Dipaolo	HOA
JL1006	Plop, Plop, Fizz, Fizz, O What a Relief it Is	Chelsea Fechter	HHM
JL1007	The Relationship Between Strength and Pitching Speed	Steven Fisher	TPM
JL1008	Fastest Antacid Relief and the Best Buy	Daemoni Leo	FKM
JL1009	Does Temporary Loss of Sight Instantly Enhance the Ability to Hear?	Patrick Murphy	SLM
JL1010	The Effects of Mithramycin-A on Colon Cancer in Different Instillations	Qiyu Wang	TPM
JL1011	The Effects of Age on Peripheral Vision	Hayley Willer	RCM
JL1012	Antioxidant Activity in Tea	Devin Zhang	TPM

Microbiology

JL1101	The Antibacterial Effects of Honey	Juliana Biro	CJM
JL1102	Isolating and Chemically Treating Household Bacteria Isolated From Cheese.	Shilpa Kannan	TPM
JL1103	The Antibacterial Effects of Natural Vegetables	Xin Shan	TPM

Physics

JP1201	The Conduction of Heat on Metals	Mark Berry	TPM
JP1202	Does the Horizontal Angle of a Mirror Affect the Reflected View of an Object?	Jacob Cantor	GBM
JP1203	Zap the Ice	Krzysztof Franaszek	RFM
JP1204	Magic Magnets	Ilene Friedman	CJM
JP1205	Electric Magnet	Anna Hemingway	EWM
JP1206	Conductivity: Conductors and Insulators	P. Hernando-Kaminsky	CJM
JP1207	Robotic Input/Output	Jacob Hurwitz	RFM
JP1208	Paint's Reaction	Belinda Juang	HHM





Project	Title of Project	Exhibitor's Name	School
JP1209	The Effects of Light Inclination on Solar Panel Energy Output	Abiola Lanionu	TPM
JP1210	Marbles and Ramps	John Lillibridge	NBM
JP1211	Biggest Bubble	Brandon Lynch	BAM
JP1212	Insulation Examination	Joseph Martin	FKM
JP1213	Generators	Simbarashe Marufu	BAM
JP1214	Backyard Ballistics II	Ian McNally	NBM
JP1215	Water Works	Urja Mittal	TPM
JP1216	Shoot Light for Long Flight	Kyle Murphy	EWM
JP1217	Battery Test	Victoria Pham	BAM
JP1218	Does Electromagnetism Affect All Metals?	Ashwin Ravi	CJM
JP1219	Which Types of Bubbles Last Longer?	Kavahn Serrette	BAM
JP1220	Red Light Overpowers Blue Light	Alexander Smith	EWM
JP1221	Design, Construction and Testing of a Michelson Interferometer	Earl Smith	NBM
JP1222	The Effects of Varying Angles of Attack on Force of Lift	Frank Wen	TPM
JP1223	The Rubber Band Test	Daniel Wolf	EWM
JP1224	Does It Take a Ball Longer to Roll Down on Smooth Surfaces Than Lumpy Surfaces?	Demetrius Young	FKM



Pepper Buckley, Ph.D.
Licensed Psychologist
Potomac, MD
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Congratulations to all students exhibiting their work at this celebration of science, and to the volunteers, judges, parents, science teachers, mentors and sponsors whose gifts of time, knowledge, guidance, support and excitement shaped this

ScienceMONTGOMERY, 2005





Project	Title of Project	Exhibitor's Name	School
Team Projects (Life)			
JL1501	Bacterial Growth in Milk Spoilage	Kevin Meng	FQM
JL1501	Bacterial Growth in Milk Spoilage	Kiran Patel	FQM
JL1502	Chromatography	Ashley Foley	SCL
JL1502	Chromatography	Moira Ann Malloy	SCL
JL1502	Chromatography	Elizabeth Whiting	SCL
JL1503	Fast Fertilizers	Kyujoo Choi	TPM
JL1503	Fast Fertilizers	Sandra Stibitz	TPM
JL1504	How Does Container Size Influence Ripening?	Katarina Harvey	SCL
JL1504	How Does Container Size Influence Ripening?	Ashley Patterson	SCL
JL1505	Which Meat Absorbs More Water?	Stephanie Willett	EWM
JL1505	Which Meat Absorbs More Water?	Rose Wu	EWM

Team Projects (Physical)

JP1551	Alka-Seltzer Balloons	Israel Morales	EWM
JP1551	Alka-Seltzer Balloons	Darius Quach	EWM
JP1552	Balloon Rocket Experiment	Alexa Kline	EWM
JP1552	Balloon Rocket Experiment	Kathleen (Katie) Li	EWM



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For more information, call Walter Mitton or Amy Blackburn at the NIH Office of Community Liaison at 301-496-3931 (TTY users should call the Federal Relay Service at 1-800-877-8339), send an e-mail to mittonw@mail.nih.gov or visit our Web site at <http://sharethehealth.od.nih.gov>.

**Individuals who require reasonable accommodations to participate in this event should contact Walter Mitton via one of the methods listed above no later than April 1, 2005.*



Project	Title of Project	Exhibitor's Name	School
JP1553	Boiling Points of Liquids	Chris Bachman	FQM
JP1553	Boiling Points of Liquids	Matt Cuzzo	FQM
JP1554	Effect of Chemicals on the Melting of Ice Cubes	Shikha Chaurasia	FQM
JP1554	Effect of Chemicals on the Melting of Ice Cubes	Stella Park	FQM
JP1555	Effects of Acid on Tooth Enamel	Tanya Pakzad	CJM
JP1555	Effects of Acid on Tooth Enamel	Ruochen Zhang	CJM
JP1556	Effects of Household Acids on Chalk	Amanda Dols	EWM
JP1556	Effects of Household Acids on Chalk	Amanda Gonzalez	EWM
JP1557	Every Day Places Causing Hearing Loss Cases	Samantha Costa	SAA
JP1557	Every Day Places Causing Hearing Loss Cases	Tierney Roche	SAA
JP1558	Gliding On Air	Matthew Gatwood	WOM
JP1558	Gliding On Air	Paul Yaginuma	WOM
JP1559	How do Methane Bubbles Sink Ships?	Eric Lindahl	GBM
JP1559	How do Methane Bubbles Sink Ships?	Theo Lorrain-Hale	GBM
JP1560	Liquid Conductors	Minsoo Han	TPM
JP1560	Liquid Conductors	Rostislav Tsiomenko	TPM
JP1561	Meltdown Madness	Laura Plitman	FQM
JP1561	Meltdown Madness	Brandi Porter	FQM
JP1562	Operation: Propeller	Patrick Gunawan	SAA
JP1562	Operation: Propeller	David Nguyen	SAA
JP1562	Operation: Propeller	Kevan Yang	SAA
JP1563	Our Hover Craft Project	Vignesh Dhanasekaran	RLM
JP1563	Our Hover Craft Project	Colin Kuserk	RLM
JP1563	Our Hover Craft Project	Tenji Tembo	RLM
JP1564	Oxyclean Concentration and Its Effect on Stain Removal	Jenny Cossette	EWM
JP1564	Oxyclean Concentration and Its Effect on Stain Removal	Stephanie Golub	EWM
JP1564	Oxyclean Concentration and Its Effect on Stain Removal	Kirsten Robb-McGrath	EWM
JP1565	Slow Roller Testing	Sam Hendel	CJM
JP1565	Slow Roller Testing	Ben Lewis	CJM
JP1566	Sweet 'N' Sour Electricity	Julie Arbit	CJM
JP1566	Sweet 'N' Sour Electricity	Emily Westrick	CJM
JP1567	What Should We Wear?	Jeechee Chen	TPM
JP1567	What Should We Wear?	Zimin Hang	TPM
JP1567	What Should We Wear?	Joshua Lee	TPM
JP1568	When Equal Amounts of Acids and Bases are Mixed Together, Will the Result be Acidic or Basic?	Becky Song	RCM
JP1568	When Equal Amounts of Acids and Bases are Mixed Together, Will the Result be Acidic or Basic?	Duan Wang	RCM



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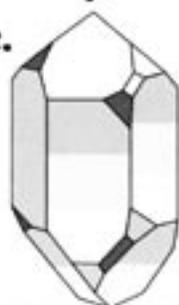
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Exhibits in the Senior Division, Grades 9-12

Project	Title of Project	Exhibitor's Name	School
Behavioral and Social Sciences			
SL101	“Why Did I Play That Way Coach?”	Michele Abbott	SWH
SL102	Longevity Within Families	Sarah Bisceglie	SWH
SL103	Videos and Heartrate	Brittney Corwin	SWH
SL104	Music Testing on Toddlers	Samantha Fernebok	SWH
SL105	Memory and Context	Jen Greenhut	SWH
SL106	The Effect of Male Facial Features	Katelyn Kinker	SWH
SL107	Music and Handwriting	Andrea Mantilla	SWH
SL108	Too Wordy	Serena Mitchual	SWH
SL109	Too Close for Comfort	Rachel Packer	SWH
SL110	Aggression Related to Birth Order	Lauren Polovoy	SWH
SL111	Teenagers and Alcohol Abuse	Rachel Pozzatti	SWH
SL112	Predicting Success and Testing Memory?	Ernika Quimby	SWH
SL113	Memories in Instrumental vs. Choral Music Students	Mala Sathe	SWH
SL114	Age Versus Learning Ability	Rana Sharaf	MGH
SL115	Stress in Different Grades	Patrick Stinson	SWH
SL116	Is Your Coach Too Old?	Villy Stolper	SWH
SL117	Subliminal Messages	Sarika Tamaskar	SWH
Biochemistry			
SL201	Association Between Galanin Receptor 3 Polymorphisms and Post-Dissectomy Sciatic Pain	Daniel Aisen	BLH
SL202	Can a Foreign Gene be Inserted into Bacterial or Mammalian Cells?	Tania Chatterjee	MGH
SL203	Are Mirnas Conserved Across Species Boundaries?	Rania Dagalakis	CHH
SL204	The Direct Effects of Gonadotropin Releasing Hormone on Endometrial Cancer Cells	Joshua Ho	WOH
SL205	Study of the Interaction Between the Tumor Suppressor Menin and the DNA-Repair Protein FANCD2	Padma Rajagopal	BLH
SL206	Quantitative Analysis of PicoGreen and Hoescht 33258 Binding Discrepancies to Animal-, Phage-, and Plant-Based DNA	Kristina Yang	BLH
Botany			
SL301	Does Phosphate from Dishwashing Detergent Stimulate Plant Growth?	Theresa Cybulski	SWH
SL302	Effects of Vinegar and Ammonia on Tall Fescue Grass	Nicolas Fiore	SWH
SL303	Is the Size of the Nucleus Proportional to the Size of the Cell?	Darya Gakh	BCH
SL304	Effect of Nitrate Fertilizer on the Rhizobium Development on Bean Roots.	Meghan Hughes	BCH



Project	Title of Project	Exhibitor's Name	School
SL305	Photo Synthesis	Ini Li	WOH
SL306	The Effects Of Caffine On Wheat Rust: Can It Help Save Our Plants	Andrew Melmed	BCH
SL307	Does Light Affect a Plant's Ability to Make Photographs	Nastasia Paul-Gera	BCH
SL308	What a Plant Needs!	Stephany Salazar	BCH
SL309	Evaluation of the Several Auditory Stimuli on Plant Growth	Spencer Seneff	MGH
SL310	What Type of Fertilizer?	Quyen Tran	SWH
SL311	The Effects of Caffeine on Bean Plants	Marisol Williams	BCH

Chemistry

SP401	Crystals and Contaminants	Rebecca Fink	SWH
SP402	Muscle Car Makeover: Getting the Dirt off a 1973 Dodge Challenger.	Katherine Grasson	SWH
SP403	Copper Oxide Removal	Laura Iriarte	QOH
SP404	Molecular and Orbital Visualization with Computers	Fernando Ramirez	GBH
SP405	Oxidation Resistance and Mechanical Properties of Ceramics in the ZrB ₂ / Ta ₅ Si ₃ System	Adrienne Smith	BLH
SP406	Synthesis and Characterization of Yttrium Tetraboride and Yttrium Tetraboride / Silicon Carbide Ceramics	Lauren Smith	BLH

Computer Science

SP501	How Does an Overclocked Processor Affect the Performance of a Computer?	Benjamin Chang	SWH
SP502	Evaluation of Web Services and Portal Solutions: Integration into the Advanced Health and Disaster Aid Network	David Crawford	BLH
SP503	Automated Identification of Planar Regions of White Matter in Human Brain During Diffusion Tensor Tractography	Gregory Eden	BLH
SP504	Comparison of Search Engines	Erica Hogan	SWH
SP505	Development of a Finite Volume Modeling Utility in Python	Alexander Mont	BLH
SP506	Collecting Information on Colorado Vegetation Using TERRA ASTER Satellite Imagery	Sebastian Wood	BCH



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Project	Title of Project	Exhibitor's Name	School
Earth Science			
SP601	Volcano	A-ram Lee	SWH
Engineering			
SP701	A Nonlinear Analog VLSI Model for the Cochlea	Ameer Abutaleb	BLH
SP702	INLS Causeway Ferry	William Frank	WWH
SP703	Addition with a Ripple Bit Adder	James Keil	BCH
SP704	Physical Principles: Hovercraft Test Lab	Joe Levy	BCH
SP705	A Software System for Truss Analysis and Optimization	Jonathan Long	WOH
SP706	Dynamics of Fluid Flow Around Aerospace and Under Water Vehicles	A. Sarada Rao	WWH
SP707	Effect of Different Materials on Sound Propagation	Reem Sharaf	MGH
SP708	The Effects of Teeth Whitening on the Mechanical Properties of Dental Composites	Mithun Suresh	CHH
SP709	Smoke Movement in Tunnel Fires	Tom Swartz	BCH
Environmental Sciences (Life)			
SL801	The Application of Regression Equations to CO2 Levels in the Atmosphere	David Damtoft	BCH
SL802	Let's Mutate	Shima Gholamimehrabadi	MCS
SL803	Nutrient Concentration of the Hawling River Watershed	Andrea Latimer	SWH
SL804	The Effects of Environmental Toxins on Seed Germination	Andrew Mertz	MGH
SL805	The Effect of Excess Ultraviolet Radiation on the Growth of Plants	Sophia Rizvi	MGH
SL806	The Effects of Ammonia on Populations of <i>Daphnia Magna</i>	Aurora Tsai	SWH
SL807	Get A Charge Out of Yeast	Alyssa Walker	SWH
SL808	Worm's Effect on Bean Plant Growth	Hillary Whippen	SWH

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Project	Title of Project	Exhibitor's Name	School
Environmental Sciences (Physical)			
SP851	How Different Surface Materials Affect the Greenhouse Effect on Air Temperature.	Daniel Gardner	MGH
SP852	The Effects of Distillation, Generic Filtration, UV Light, Boiling, and Brita Filtration on Water's pH and Hardness	Yolanta Millner	MGH
SP853	Rust	Kyle Saylor	BCH
SP854	The Effects of Location and Season on Stream Water's PH Levels and Sediment	Bernard Wong	MGH
Mathematics			
SP901	On Universality Properties of Positive-Definite Integral Quadratic Forms	Scott Kominers	WWH
Medicine and Health			
SL1001	To Drink or Not to Drink?	Maryam Badakhsh	MCS
SL1002	Crack the Pain	Lauren Edwards	SWH
SL1003	Structural Analysis of Brain Development in Klinefelter's Syndrome	Gregory Ihrie	WWH
SL1004	In Vitro Efficacy of Alternative Versus Conventional Treatments for Pediculosis Capitis	Liam McMahon	BCH

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Project	Title of Project	Exhibitor's Name	School
SL1005	Finger Prints and Genetics	Miriam Muhammad	MCS
SL1006	The Effect of Smell on Taste	Sameera Rizvi	MGH
SL1007	Toward Early Detection of Alzheimer's Disease: Developing a Method to Determine Activity in the Cerebral Cortex Using Surface Analysis	Prasanna Vasudevan	BLH
SL1008	"I Can Hear Your Heart Beat"	Jamie Willson	SWH
SL1009	The Development of the M2, M3, and M4 Muscarinic Receptors in the Embryonic Rat Telencephalon	Min Wu	BLH

Microbiology

SL1101	Rubisco Genes in Organisms	Mac Farrell	SWH
SL1102	Hands-On Bacteria	Josh Firestone	SWH
SL1103	The Effects of Calcium Propionate on Mold	Hilary Lane	SWH
SL1104	Developing a Beta-Galactosidase Packaging Cell Line	Kendra Leigh	BLH
SL1105	Methods Development For Viral Genomics Studies	Mahir Maruf	WOH
SL1106	Which pH Works Best?	Cristina Rentas	SWH
SL1107	Living Habits of Slime Molds	Lillian Tsai	CHH
SL1108	Sensitivity of Various Bacterial Strains to Ultraviolet Light	Sylvia Tsakos	BCH

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A message from NIST:

The National Institute of Standards and Technology (NIST) is proud to be one of the sponsors, for the 32nd year, of the Montgomery Area Science Fair. In order to ensure a successful future for the United States and a good quality of life for its citizens, NIST recognizes the importance of encouraging interested youth to pursue careers in science and technology.

The fair is a wonderful opportunity for high school and middle school students to gain experience in the process of scientific research and development, with the added benefit of being recognized and honored for the projects they exhibit.

Each year attendees are impressed by the creative and original exhibits of the students. The schools they represent have good reason to be proud of these future scientists and engineers.

NIST is honored to be part of this event and thanks the Montgomery County Public Schools, the award sponsors and judges, the teachers and parents of these incredibly talented young people, and Science Montgomery, for supporting this beneficial and important program.

Hratch G. Semerjian
Acting Director



Project	Title of Project	Exhibitor's Name	School
Physics			
SP1201	Calibration of a Single-Photon Counting Detector by Direct Comparison to a Transfer Standard	Douglas Adams	BLH
SP1202	Physics of Trailing Edge Separated Flow over a Hydrofoil using 2-D and 3-D Flow Visualization of a LES Database	Jason Chen	CHH
SP1203	Packaging Materials	Bryan Hoffman	QOH
SP1204	Recommissioning an X-Ray Diffractometer	Saul Kinter	BLH
SP1205	Testing for Cell Phone Reception	Rob Myers	SWH
SP1206	Simple Coupled Pendulums	Erin Wolpert	BCH
Space			
SP1301	Modeling the Distribution of Extrasolar Comets Around the Star IRC +10216	Abigail Fraeman	BLH
SP1302	Effects of Atmospheric Turbulence on Simulated Starlight in a Low-Pressure Telescope Environment	Renee Park	BLH



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University of Maryland



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Project	Title of Project	Exhibitor's Name	School
Zoology			
SL1401	Loggerhead Survival in Correlation with Nest Depth and Location	Eric Bryant	SWH
SL1402	When You Smile	Dana Gale	SWH
SL1403	Effect of Light Deprivation on Gene Expression in <i>Anopheles gambiae</i> : Assessment by Microarray Analysis	Seth Hoffman	RMH
SL1404	The Effect of Biotin on Sea Stars	Megan Johnson	SWH
SL1405	The Effect of Nicotine Levels on Zebrafish Growth and Development	Beatrice Parker	BCH
SL1406	Gene Expression in the Brain	Daniel Sahm	WWH
SL1407	Development of a Single Cannula Thermodilution Cardiac Output System (SCT) for Rats	Kathy Wang	BLH
SL1408	Now You See Me, Now You Don't	Katie Zdilla	SWH
Team Projects (Life)			
SL1501	Bacterial Growth in Water	Alexandra Evans	SWH
SL1501	Bacterial Growth in Water	Alyson Kauffman	SWH
SL1502	Correlation Between AP Biology Unit Test Scores and Study Techniques	Samantha Lubel	SWH
SL1502	Correlation Between AP Biology Unit Test Scores and Study Techniques	Stephanie Simpson	SWH
SL1503	Dark vs White Chocolate: Heart Disease	Ayan Ibrahim	SVH
SL1503	Dark vs White Chocolate: Heart Disease	Noelle Singh	SVH
SL1504	Development of a Blood-Free Broth System Using Oxyrase Enzyme Complex	Tessa Carducci	WOH
SL1504	Development of a Blood-Free Broth System Using Oxyrase Enzyme Complex	John Hooff	WOH
SL1505	Effect of Maternal Exercise on Infant Birth Weight	Mary Marks	SWH
SL1505	Effect of Maternal Exercise on Infant Birth Weight	Jennifer Pruette	SWH
SL1506	Effects of Music on Math	Qian Liu	SVH
SL1506	Effects of Music on Math	Jasmine Mordecai	SVH
SL1507	Inherited Guppy Tail Designs and Reproductive Success	Messai Belayneh	BCH
SL1507	Inherited Guppy Tail Designs and Reproductive Success	Andrew McCarron	BCH
SL1508	Music and Studying	Benjamin Cho	SWH
SL1508	Music and Studying	Manan Parikh	SWH
SL1509	Short N' Sweet Truth on Artificial Sweeteners	Javier Garza	SWH
SL1509	Short N' Sweet Truth on Artificial Sweeteners	Nate Nguyen	SWH
SL1510	Shortcuts	Shaun Robinson	SWH
SL1510	Shortcuts	Michael Rollings	SWH
SL1511	Should Mom Go Back to Work?	Katie Coursen	SWH
SL1511	Should Mom Go Back to Work?	Alicia Hartlove	SWH



Project	Title of Project	Exhibitor's Name	School
SL1512	Small Polyped Scleratinian Coral Growth Affected by Aquarium Environmental Change	Ben Frable	BCH
SL1512	Small Polyped Scleratinian Coral Growth Affected by Aquarium Environmental Change	Alexandre Mariuzza	BCH
SL1513	Smokin?	Kelly Bramhall	SWH
SL1513	Smokin?	Ashley Porter	SWH
SL1514	Super Preservative	Angie Baker	BCH
SL1514	Super Preservative	Maddie Stone	BCH
SL1515	Too Tired to Test?	Zachary Foster	SWH
SL1515	Too Tired to Test?	Matthew Lowe	SWH
SL1516	What Affects Plant Growth?	Daniel Kubis	SWH
SL1516	What Affects Plant Growth?	Maitreya Sriram	SWH

Team Projects (Physical)

SP1551	A Comprehensive Empirical Model for Determining the Axial Force Coefficient of a Rocket Traveling at Submach Speeds	Brian Go	BCH
SP1551	A Comprehensive Empirical Model for Determining the Axial Force Coefficient of a Rocket Traveling at Submach Speeds	Joshua Klontz	BCH
SP1552	Determination and Implementation of the Most Effective Method of Load Detection on the Tetrahedral Robotic Apparatus (TETRA)	Ilya Ganelin	BLH
SP1552	Determination and Implementation of the Most Effective Method of Load Detection on the Tetrahedral Robotic Apparatus (TETRA)	Alexander May	BLH
SP1553	Developing an Efficient Working Fluid Combination for Use in a Small-Scale Novel Absorption System	Gregory Comstock	BLH
SP1553	Developing an Efficient Working Fluid Combination for Use in a Small-Scale Novel Absorption System	Gregory Cox	BLH
SP1554	Dodging Obstacles with Infrared Sensors	Walter Beller-Morales	BCH
SP1554	Dodging Obstacles with Infrared Sensors	Peter Sebrechts	BCH
SP1555	Infrared Detection	Robert Coe	BCH
SP1555	Infrared Detection	Nick Latourette	BCH
SP1556	Magnetohydrodynamics: Induction in a Saline Solution	David Martin	WWH
SP1556	Magnetohydrodynamics: Induction in a Saline Solution	Joshua Martin	WWH



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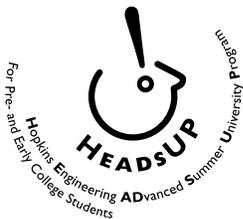
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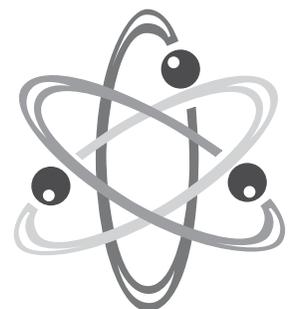
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ScienceMONTGOMERY

ScienceMONTGOMERY wishes to thank all the teachers, supervisors, and other school staff, for their unstinting contributions to the students in our 2005 Fair. We especially thank Oakland Terrace Elementary School and the Montgomery County Public Schools Office of Science Curriculum and Instruction for their support of our endeavor.





It's never too early to start supporting the 2006 Fair!
ScienceMONTGOMERY needs your elements of support to cover award prizes, operating costs and other expenses.

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With support of \$10,000, you will become Gold (Au) sponsor. This entitles your business/organization to a banner and mention as a corporate sponsor at the event, a full-page color cover ad in the event program and an award in your name (e.g. "The XYZ Company Life Sciences Award"). In addition, your logo will be posted on www.scienceMONTGOMERY.org with a link to your website.

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All donors will be listed in the program

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Please contact me. We have staff interested in volunteering as judges.

Please make checks payable to the Montgomery Area Science Fair Association

All support must be submitted by Tuesday, January 31, 2006

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***ScienceMONTGOMERY* greatly appreciates your support!**

Pepper D. Buckley, Ph.D. – Fair Director, *ScienceMONTGOMERY*

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