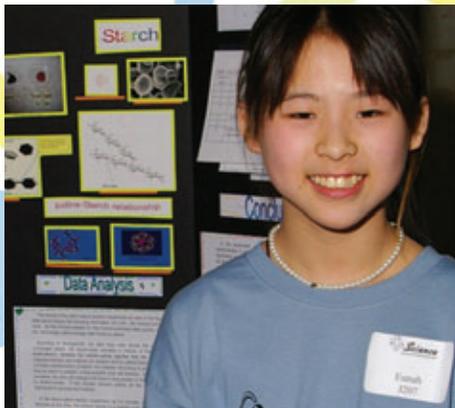


Science

MONTGOMERY



MONTGOMERY COUNTY SCIENCE FAIR 2008 MARCH 14, 15, 16

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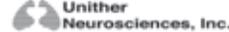
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Drs. Jay and Pepper Buckley
Human Genome Sciences, Inc.
Hughes Network Systems
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Office of Dietary Supplements, National Institutes of Health
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University of Maryland, Division of Research
United States Nuclear Regulatory Commission

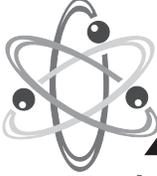
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University of Maryland, Department of Aerospace Engineering
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Kevin and Cynthia Connolly
Fitzgerald Auto Malls
Futron Corporation
Holland and Knight, LLC
Ellen and Bill Kominers
Lab Products, Inc.
Chiesi Pharmaceuticals, Inc.



2008  **Science** Fair Schedule
MONTGOMERY

www.ScienceMONTGOMERY.org

Friday, March 14, 2008

4:00 PM - 9 PM

Student Project Set Up: Students set-up display boards and go through Safety Inspection at the Armory Building, University of Maryland, College Park, MD.

Saturday, March 15, 2008

8 AM - 12 Noon

Judges Project Preview Period

12 Noon – 2:30 PM

Students Grades 6-8 Interviews by Judges and Community Awards Organizations

2 PM – 5:30 PM

Students Grades 9-12 Interviews by Judges and Community Awards Organizations

5:30 PM - 7 PM

Open House for the General Public, at the Armory Building at the University of Maryland, College Park.
Students should remove their projects at 7 PM.

7:00 PM-9:00 PM

Project Removal

Sunday, March 16, 2008

2 PM - 4 PM

Awards Ceremony at the Gaithersburg High School Auditorium, Gaithersburg, MD.

(Any projects not removed by 9 PM Saturday, March 15 will be discarded.)



MONTGOMERY AREA SCIENCE FAIR ASSOCIATION

Welcome to *ScienceMONTGOMERY*, one of the largest science fairs in the United States, a Celebration of Science in its 52nd year.

A not-for-profit organization, *ScienceMONTGOMERY* is dedicated to encouraging and promoting an interest in science to the youth of our Area, encouraging scientific activities, and bringing together scientists, engineers, mathematicians, educators, students, and parents. *ScienceMONTGOMERY* provides a venue for over \$45,000 in prizes for outstanding projects in middle school and high school divisions. In addition to the cash awards for students winning 1st, 2nd and 3rd places in their categories, and ISEF trips provided by *ScienceMONTGOMERY*, special awards from area businesses, scientific, professional and educational organizations, and the United States Government, include cash, 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. The top senior high school winners will be sent, fully funded, to the Intel International Science and Engineering Fair 2008, to be held in Atlanta, GA. There they will compete against winners from the United States and over 42 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.

A magnificent group of sponsors allows *ScienceMONTGOMERY* put on this Fair for our students. MedImmune, Inc has returned for a fourth year as our top level sponsor. Over 200 judges, representing area businesses and professional organizations volunteer their entire Saturday to talking with these outstanding students about their projects.

Our all-volunteer staff of professionals from the education and science communities of Montgomery County thanks all of the organizations and individuals you see in this program for bringing you this 52nd Fair. *ScienceMONTGOMERY* congratulates all the students who prepared projects for the 2008 Fair. Celebrate Science and be very proud!

Pepper D. Buckley, Ph.D., Fair Director
President, Montgomery Area Science Fair Association



OFFICE OF THE COUNTY EXECUTIVE
ROCKVILLE, MARYLAND 20850

Isiah Leggett
County Executive

March 2008

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

Dear Dr. Buckley:

Montgomery County is very pleased to again this year support the efforts of *ScienceMONTGOMERY*, the countywide Science Fair of the Montgomery Area Science Fair Association. This exciting event attracts more than 1,500 Montgomery County public and private school students each year, and given the county's longstanding national and international prominence in the life sciences and technology fields, we are indeed proud to support your mission to advance and celebrate outstanding performance in science education in our community.

The talented and dedicated young students being recognized during this year's event are the inventors, entrepreneurs, teachers, chief scientists and presidents of tomorrow. Montgomery County is committed to ensuring a strong, vibrant economy, vital living for all residents, and healthy and sustainable communities. Maintaining one of the nation's highest performing K-12 public school systems is essential to these goals.

I commend the important contributions you and *ScienceMONTGOMERY* make within the community, and applaud those businesses that also support your ongoing efforts to recognize, honor and invest in the promise, talent and achievement of our youth.

Sincerely,

Isiah Leggett
County Executive



MONTGOMERY AREA SCIENCE FAIR ASSOCIATION

52nd Montgomery Area Science Fair – 2008
Reckord Armory, UMDCP College Park, Maryland

—Officers and Board, Montgomery Area Science Fair Association—

President: Dr. Pepper D. Buckley
Psychologist, Private Practice

Vice President: Heidi Parker
Parent

Treasurer: Dr. Jay L. Buckley
Lockheed Martin, Retired

Secretary: Gary Cahn
National Strategies, Retired

—Board Members—

Dr. David W. Bonnell
NIST, Retired

William Kominers, Esquire
Partner, Holland & Knight, LLP

Dr. Kevin Connolly
NOVAVAX

Artemis Dagalakis
Parent, Financial Advisor

James M. Douglas
Parent, Science Resource Teacher
Sherwood High School

Dr. Morris Makobongo
National Institutes of Health*

Jody Keating, MBA
Development Consultant

Dr. Louis Ostrach
NASA*

Dr. Laura Lee Johnson
NCCAM/National Institutes of Health*

Dr. Janet Nelson
National Institutes of Health*

Dr. Milton Axley
MedImmune

Greg Neuschafer, Captain, USN
Office of Naval Research

Bryan Goehring, B.S., MBA
Science Resource Teacher
Takoma Park Middle School

Linda Peterson, MA
MedImmune

*Serving in their personal capacity.

*Persons interested in joining the ScienceMONTGOMERY Board should contact
Dr. Pepper Buckley at SciMONT@aol.com*



Montgomery County
Department of Economic Development

is a proud sponsor of the

52nd annual
Montgomery County
Science Fair

Congratulations to all participants for your outstanding achievement.

We look forward to your continuing contribution to the county's
prestigious science, life sciences and
technology community.



MONTGOMERY COUNTY, MARYLAND
240-777-2000 | *SMART*Montgomery.com



AWARDS PROGRAM

2:00 P.M.

Sunday, March 16, 2008

Gaithersburg High School Auditorium

**Opening of Awards Program
& Welcome to ScienceMONTGOMERY**

Pepper D. Buckley, Ph.D.
President, Montgomery Area Science Fair Association

Congratulations to Student Scientists:

Toni Stiefel
*Director
Internal Communications & Community Relations
MedImmune, Inc.*

Presentation of Community Awards:

Pepper D. Buckley, Ph.D.
Fair Director

William Kominers, Esquire
Board Member

Community Award Organizations Presenters

Presentation of Senior Category Awards:

Pepper Buckley & ScienceMONTGOMERY Board Members

Presentation of Junior Category Awards:

James Douglas
& other ScienceMONTGOMERY Board Members

Presentation of ISEF Awards:

Pepper Buckley
Toni Stiefel

Thank you & Adjournment:

Dr. Pepper

Special Fair Responsibilities:

Decals, Tees, & Website Oversight: Gary Cahn

Community Awards: Louis Ostrach, *Chairperson*

Display and Safety Committee: Linda Peterson, *Chairperson*

Fund Raising: Pepper Buckley, Jody Keating, Linda Peterson, and Jay Buckley

Scientific Review Committee: Laura Lee Johnson, *Chairperson*

Milton Axley, David Bonnell, Jay Buckley, Pepper Buckley, Gary Cahn, Kevin Connolly,
Artemis Dagalakakis, Jim Douglas, Bryan Goehring, Janet Nelson, Louis Ostrach, Heidi Parker,
Greg Neuschafer, Anne Merrill, Stephen Mason

Venue and Food: Heidi Parker

Fair Director: Pepper Buckley



National Institutes of Health

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The Office of Dietary Supplements is proud to encourage scientific exploration and advancement among young scientists by supporting the Montgomery County Science Fair 2008.

- ODS Staff

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- Minerals
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<http://ods.od.nih.gov>



Office of Dietary Supplements
National Institutes of Health
Bethesda, Maryland



Community Organizations Presenting Awards

American Industrial Hygiene Association, Potomac Section
 American Meteorological Society
 American Meteorological Society, DC Section
 American Nuclear Society, Washington DC Section
 American Psychological Association
 American Society of Metals, Materials Education Foundation
 Geological Society of Washington
 American Society of Safety Engineers, National Capital Chapter
 American University
 Asian Pacific American Officers Committee
 Association for Computing Machinery
 Association of Practicing Psychologists - Montgomery and
 Prince George's Counties
 Association for Women Geoscientists
 Commissioned Officers Association, District of Columbia
 Friends of Agricultural Research-Beltsville, Inc.
 Herbert Hoover Presidential Library Association
 Institute of Food Technologists, DC Section
 Intel
 International Sustainable World Energy, Engineering &
 Environment Project Olympiad
 MedImmune, Inc.
 Mu Alpha Theta

National Association of Biology Teachers
 National Capital Astronomers
 National Oceanographic and Atmospheric Administration
 National Society of Professional Engineers
 National Space Club
 Northrop Grumman
 Office of Naval Research
 Optical Society of America, National Capital Section
 Ricoh Corporation
 Stockholm Junior Water Prize
 Society for In Vitro Biology
 Society for Mining, Metallurgy & Exploration,
 Washington DC Section
 Society for Science & the Public Middle School Program
 Chemical Society of Washington
 Surfrider Foundation, Washington DC Chapter
 Towson University
 United States Air Force
 United States Army
 United States Department of Health and Human Services
 United States Metric Association
 Yale Science and Engineering Association, Inc.
 Central Intelligence Agency



The American Astronomical Society proudly supports the Montgomery County Science Fair

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2008 Category and ISEF Awards Judges

| | |
|------------------------------|---|
| Mr. James Acklin | Healthcare Reform Collaboratory |
| Dr. Hosung Ahn | Nuclear Regulatory Commission |
| Ms. Mary Anderson | QIAGEN |
| Dr. Jonathan Arias | National Institutes of Health |
| Dr. Ivelisse Aviles | U.S. House of Representatives, Rep. Luis Fortuno |
| Dr. Susan Baker | National Oceanic & Atmospheric Administration |
| Dr. Kate Baldwin | Howard University |
| Ms. Jessica Bermudez | University of Maryland Clark School Ambassadors |
| Dr. Kelsie Bernot | National Institutes of Health |
| Dr. Rasmus Birn | National Institutes of Health |
| Dr. David Bonnell | National Institute of Standards & Technology, Rtd |
| Dr. Porcia Bradford | National Cancer Institute |
| Dr. Thomas Brody | National Institutes of Health |
| Dr. Jay L. Buckley | JLB Associates, LTD |
| Dr. Pepper Buckley | Psychologist |
| Dr. K Chakrabarti | Food and Drug Administration |
| Mrs. Chaitali Chattopadhyaya | USDA, ARS |
| Dr. Swati Choksi | National Institutes of Health/NCI/CCBB |
| Mr. Jonathan Chung | University of Maryland Clark School Ambassadors |
| Dr. Kevin Connolly | Emergent Biosolutions |
| Dr. Hall Crannell | Catholic University (Retired) |
| Dr. Nicholas Dagalakis | National Institute of Standards & Technology |
| Mr. George Daniello | US Gov't - Retired |
| Dr. Mathew Daniels | National Institutes of Health |
| Dr. Robert deGroof | Accelovance Inc |
| Mr. David DeLalio | Meso Scale Diagnostics LLC. |
| Dr. James Deye | National Cancer Institute |
| Dr. Garry Didinsky | ATK Space |
| Mr. Mark Eckl | National Geodetic Survey, NOAA |
| Dr. Mark Engle | U.S. Geological Survey |
| Ms. Tracey Epstein | University of Maryland Clark School Ambassadors |
| Dr. Sethrt Ethg | |
| Ms. Barbara Fahey | National Institutes of Health |
| Dr. Brian Gable | National Institute of Standards & Technology |
| Dr. Eric Garber | Food and Drug Administration |
| Dr. Ivana Grakalic | National Institutes of Health/NIAAA |
| Mr. Rohit Gupta | HHMI/National Institutes of Health |
| Mr. Edmund Habib | National Aeronautics & Space Administration, Rtd |
| Dr. Jonathan Hardis | National Institute of Standards & Technology (U.S. Govt.) |
| Dr. John Harvey | Excimus Biotech, Inc. |
| Dr. Shannon Hill | National Institute of Standards & Technology |
| Dr. J. Terrell Hoffeld | U.S. Public Health Service |
| Mr. Larry Hothem | DOI/US Geological Survey |
| Mr. Brett Huhman | US Naval Research Laboratory |
| Ms. Mina Jain | National Institutes of Health |
| Dr. John Jones | |
| Dr. Robert Kahn | USDA-APHIS, Retired |
| Dr. Annie Kammerer | US NRC/Washington Geological Society |
| Dr. Samir Kelada | National Institutes of Health/NHGRI |
| Dr. Akanchha Kesari | Children's National Medical Center |
| Dr. Steve Kronheim | University of Maryland |
| Ms. Elizabeth LeBrun | University of Maryland Clark School Ambassadors |
| Mr. Dennis Lee | ATK Space, Beltsville |
| Dr. Lyle Levine | National Institute of Standards & Technology |
| Dr. Teresa Levitin | National Institutes of Health |
| Dr. Luowei Li | National Institutes of Health |
| Dr. Xiang-Ning Li | National Institutes of Health |
| Ms. Ivy Liu | University of Maryland, Clark School Ambassadors |
| Mr. Vlad Lokshin | University of Maryland Clark School Ambassadors |
| Dr. Li Ma | National Institute of Standards and Technology |
| Mr. James Mallos | Alice-on-Mars/Toy Design |



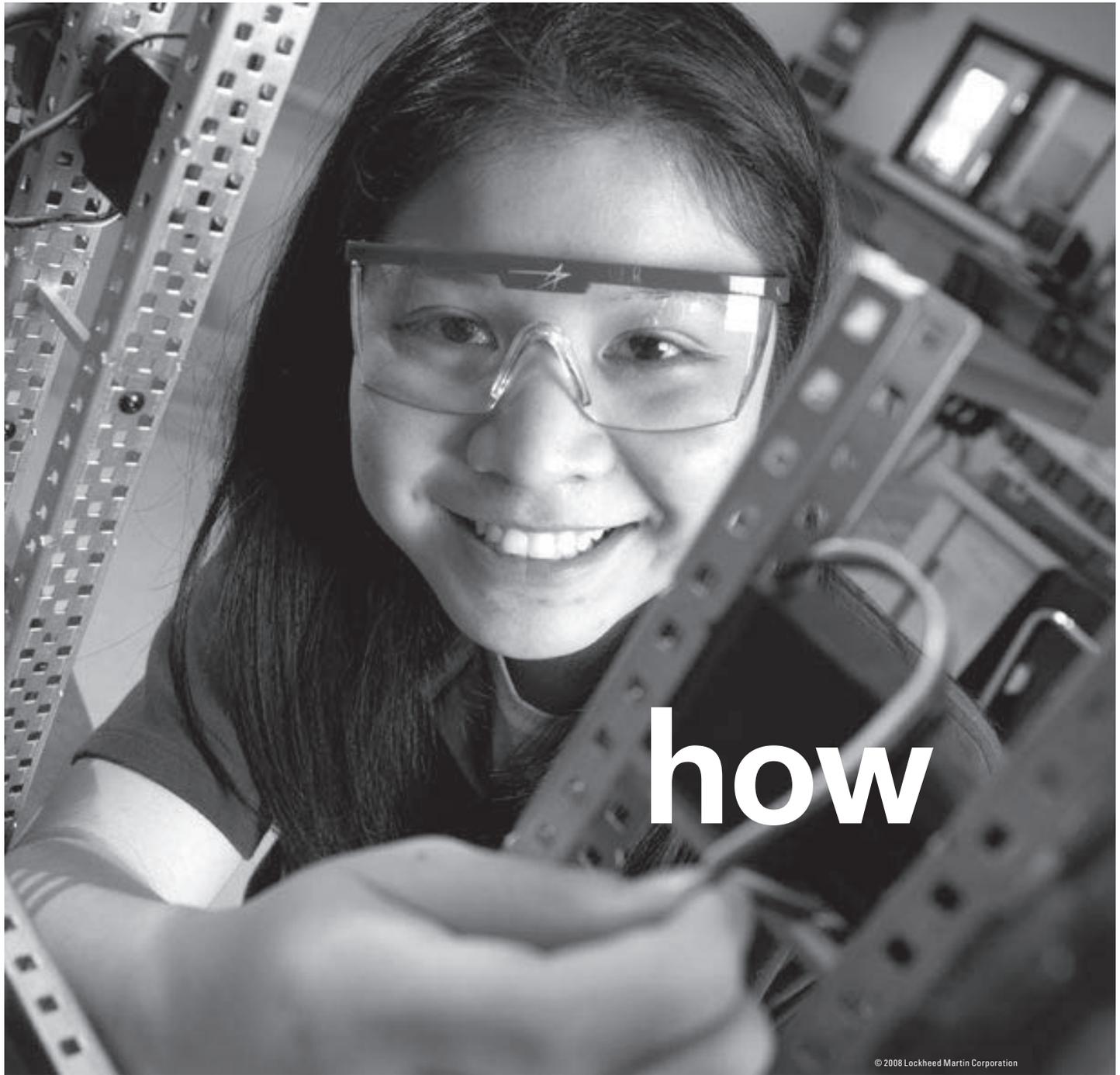
2008 Category and ISEF Awards Judges (continued)

| | |
|---------------------------|---|
| Dr. Idan Mandelbaum | BAE Systems |
| Dr. Gerald Marti | CBER Food and Drug Administration |
| Mr. Shane Martin | Northrop Grumman |
| Mr. Shane Martin | Essex Corp. |
| Mrs. Dena Martin | Lockheed Martin |
| Mr. Stephen Mason | Johns Hopkins University |
| Dr. Diane McDaniel | Montgomery College |
| Dr. Matthew Meyer | National Institutes of Health/NCI |
| Ms. Chun-yan Mi | Lockheed Martin |
| Ms. Diane Milenic | National Institutes of Health, Radiation Oncology Branch |
| Dr. Vivek Navale | Federal Government, National Archives |
| Dr. Aaron Navarro | National Library of Medicine |
| Dr. Janet Nelson | National Institutes of Health |
| Mr. Greg Neuschafer | United States Navy |
| Mrs. Joyce Njoroge | Food and Drug Administration |
| Dr. Louis Ostrach | National Aeronautics & Space Administration |
| Ms. Bernadette Owen | National Institutes of Health-NHLBI |
| Dr. Gouri Pandey | Children's National Medical Center |
| Dr. Carolina Panico | Georgetown University |
| Ms. Krishna Parekh | HHMI |
| Ms. Mrinali Patel | Howard Hughes Medical Institute |
| Dr. Robert Peters | Contractor/National Aeronautics & Space Administration |
| Mr. Nicholas Pillitteri | Lockheed Martin IS&GS |
| Dr. Mangala Rao | Walter Reed Army Institute of Research |
| Ms. Karine Reiter | National Institutes of Health |
| Ms. Molly Romick | The McConnell Group Inc./ NCAB AALAS |
| Dr. Leslie Sage | <i>Nature</i> |
| Dr. James Saunders | Towson University |
| Dr. Mary Schueler | National Institutes of Health/NHGRI |
| Mr. Daniel Shapiro | MesoScale Diagnostics |
| Dr. Peter Sheridan | National Institute of Mental Health |
| Dr. Marcia Shofner | University of Maryland, College of Chemical & Life Sciences |
| Dr. Sanjiv Shresta | The MITRE Corporation |
| Ms. Puja Singhal | |
| Mr. Clyde Smithson | Lockheed Martin Corporation |
| Dr. Glenn Solis | Georgetown University Medical Center |
| Mr. Gary Spindler | BearingPoint |
| Mr. Charles Sun | University of Maryland |
| Mr. Rattan Tawney | Bechtel Corporation |
| Dr. Kim Taylor | National Institutes of Health |
| Dr. Constante Tinaza | Food and Drug Administration |
| Dr. Mehrdad Tondravi | National Institutes of Health |
| Ms. Yi Tsai | Chevy Chase Bank - Banking & Finance |
| Mr. Edward Vogel | University of Maryland Clark School Ambassadors |
| Ms. Kim Volkert | SoBran, Inc. /NCAB |
| Ms. Cassie Vose | University of Maryland Clark School Ambassadors |
| Mr. Mark Willis | Hydropac Lab Products, Inc. |
| Dr. David Winfield | Institute of Navigation |
| Ms. Victoria Yan | |
| Dr. Ming Yu | National Institutes of Health |
| Ms. Jessica Adamany | |
| Ms. Elizabeth Chew | National Institute of Standards and Technology |
| Ms. Kristine Krebs | |
| Dr. Walters Mbimba | Charles River Laboratories. |
| Ms. Adeline Govekung | Charles River Laboratories |
| Ms. Belky Rivas | National Institutes of Health |
| Dr. Dianne Hirsch | Food and Drug Administration |
| Ms. Tina Long | Bioqual |
| Ms. Juanetta Asare-Wassow | So-bran |
| Ms. Katie Zuchowski | National Institute on Drug Abuse |

**ScienceMONTGOMERY 2007 Graduates**

| Category | High School | College |
|--------------------------------------|-------------------------|---------------------------------------|
| Behavioral and Social Science | | |
| 1 Erick Alves de Sa | Sherwood | University of Maryland-College Park |
| 1 Ryan Chiang | Sherwood | University of Maryland-College Park |
| 1 Patrick Young | Sherwood | University of Virginia |
| Biochemistry | | |
| 1 Victoria Yao | Montgomery Blair | University of Chicago |
| 2 David Chen | Walt Whitman | Tufts University |
| Botany | | |
| 2 Lorrin Barton | Sherwood | University of Maryland-College Park |
| Chemistry | | |
| 2 Danielle Romano | Sherwood | Towson University |
| Computer Science | | |
| 2 Joshua Yanovski | Montgomery Blair | University of Chicago |
| Earth and Space Science | | |
| 1 Beatrice Parker | Bethesda-Chevy Chase | Massachusetts Institute of Technology |
| 2 Hailiu Yang | Montgomery Blair | Haverford College |
| Engineering | | |
| Yi An Sun (Ann) | Montgomery Blair | University of Maryland-College Park |
| Mathematics | | |
| 2 Jeremy Lent | Sherwood | Yale University |
| 3 Brian Lawrence | Montgomery Blair | California Institute of Technology |
| Medicine and Health | | |
| 1 Tanvi Gupta | Richard Montgomery | University of Maryland-College Park |
| 2 Andrew Ding | Montgomery Blair | New York University |
| Microbiology | | |
| 3 Shima Gholamimehrabadi | Muslim Community School | University of Maryland-College Park |
| Physics | | |
| 3 Cyril Lan | Montgomery Blair | Massachusetts Institute of Technology |
| Zoology | | |
| 1 Lynea Witczak | Sherwood | Davidson College |
| 1 Ashely Wire | Sherwood | Messiah College |
| 2 Erin Heap | Sherwood | Southern Nazarene |
| 2 Teresa Joseph | Sherwood | University of Maryland-College Park |





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**ScienceMONTGOMERY Participating Schools-2008**

| School | Abbr. | Teachers & Sponsors |
|------------------------------------|--------------|---|
| Argyle Middle School | AGM | Hurstcalderone, Sampson, Grant, Franklin, Dario, |
| Bethesda-Chevy Chase High School | BCH | McDonald, Merrell, Jaffe, Kossoff, Hogan, Yeutter, Foltz, Ockenhouse, Witkop, Mait, Rozell, Bowes, Gold, Atkinson, Ragan, Orlando |
| Butler Montessori School | BMS | Lang |
| Cabin John Middle School | CJM | McGaffin, Geer, Fazio, Anderson, Johnsen, Hinkle, Redden, Cao, Chang, Means, Jenkins, Masis, Montgomery |
| Charles E. Smith Jewish Day School | JDS | Gupta, Diamond, Harold |
| Chevy Chase School | CCS | Cornell |
| Winston Churchill High School | CHH | Kang, Sanford, Salamanaca-Riba |
| Forcey Christian Middle School | FCM | Jones, Lang |
| Gaithersburg High School | GBH | Jackson, Binns |
| Georgetown Day School | GDS | Wallace |
| Holton-Arms School | HOA | Miranowski |
| Holy Redeemer School | HRS | Cahn, Trotta |
| Home Schooled | HS | Gopin, Keen, Cameron |
| Kingsview Middle School | KIM | Loznak |
| Lakelands Park Middle School | LPM | Smiga |
| Col. Zadok Magruder High School | MGH | Sabol |
| A. Mario Loiederman Middle School | MLM | Gragle, Morales |
| Montgomery Blair High School | BLH | Fryauff, Tao, Gottesman, Ragan, Witte, Haigh, Miller, Dvorsky, Rodriguez, Tesfaye, Ragan |
| Mother of God School | MGS | Roche |
| Muslim Community School | MCS | Rehman, Saboonchi |
| Neelsville Middle School | NEM | Rajaram |
| North Bethesda Middle School | NBM | Reed, Tzavellas, Aaron, Macedonia, Trotta, Larkin |
| Northwest High School | NWH | Keller |
| Paint Branch High School | PBH | Kimchi-Sarfaty, Leffler |
| Parkland Middle School | PLM | Blair, Stein, Mayo, Janney, Ernst, Deller, Way, Battou, Blackwell, Akin, Kumar, Cohen, Evans, Vincent, Kumarasamy, Rush, Williams, Orenstein, |
| John H. Poole Middle School | JPM | Bliss, Callaghan, Rudiger, Mohanty |
| Poolesville High School | POH | Coutts & Redman, Fryauff, Curran, |
| Thomas W. Pyle Middle School | PYM | Wallis, Paxton, |
| Quince Orchard High School | QOH | Gunnerdngam, Nelson |
| Redland Middle School | RLM | Routson, Starost, Lugo, Snyder, |
| Richard Montgomery High School | RMH | Fryauff, Krywy, |
| Roberto Clemente Middle School | RCM | Brady, Banerjee, Leng, Aguirre, Sriram, Fairbairn, Patel |
| Rockville High School | ROH | Hollies |
| Rocky Hill Middle School | ROM | Patel |
| Seneca Valley High School | SVH | Kimchi-Sarfaty |
| Sherwood High School | SWH | Douglas, Kenton, Dinnerman |
| Sligo Middle School | SLM | McGill, Agard, |
| St. Andrew Apostle School | SAA | Lester, Hockhauser, Dunlow, DeSantis, Fleri, Philogene, Ehrenreich, Boies, Cerullo, Ogundipe, Flechsig, Bergmann, Raul, Daggs, Anastasi, |
| St. Catherine Laboure School | SCL | Nava, |
| Takoma Park Middle School | TPM | Epling, Goehring, Phelan, Hamlin, Luigard, Wagner |
| Tilden Middle School | TIM | Colle |
| Walter Johnson High School | WJH | Safford |
| Watkins Mill High School | WMH | Bowman |
| Westland Middle School | WEM | Rabbat, Durbin |
| White Oak Middle School | WOM | Best |
| Whitman High School | WWH | Wildstrom, Shiffrin, Hudock, DeMember |
| Earle B. Wood Middle School | EWM | Dharmasena, Chisholm, Hagarty, Shim, Roddy, LoBosco, Bjodstrup, Selig, Axley, Jones, Nguyen, |
| Thomas S. Wooten High School | WHO | Adler, Forsberg, Martin, Childs, Read |



EXHIBITS

STUDENTS IN THE JUNIOR FAIR

BEHAVIORAL AND SOCIAL SCIENCES

| | | | |
|------|--|---|------------|
| J102 | Color Confusion | Joseph Anastasi Alex Thomson | SAA SAA |
| J103 | Do Age And Gender Affect The Ability of a Middle School Student to Learn a New Language? | Rebecca Wellman | FCMS |
| J104 | Does Gender Affect Which Toys a Child Selects to Play With? | Alexus Jackson | FCMS |
| J105 | Does the Speed of Music Affect the Concentration Level of Students | Anne Brothers | FCMS |
| J106 | Effects of Music on Galvanic Skin Response | Katherine Kasunic Ekaterina Tolstaya | RCM RCM |
| J107 | Epidemiology in Action: A Cross-Sectional Study of Seatbelt and Helmet Use Among Eighth Grade Students | Trevor Taylor | FCMS |
| J108 | I Remember Like it Was Yesterday... A Study of the Accuracy of Eyewitness Accounts Over an Elapsed Period of Time | Rhiannon Sievers | FCMS |
| J109 | Multitasking: How Efficient Is It? | Nikita Maheshwari | RCM |
| J110 | Music and the Mind | Philip Del Vecchio | RCM |
| J111 | Musical Reasoning | Tatyana Gubin | TPM |
| J112 | Playing Shooting Video Games For Better Reaction Times | Henry Baron | JDS |
| J113 | Testing for Caffeine Addiction in Drosophila melanogaster | Michael Keen | HS |
| J114 | The Effect of a Student's Previous Knowledge Relating to a Picture on the Student's Ability to Remember and Copy the Picture | Emmy Johnson Lori Kaufman | TPM TPM |
| J115 | The Effect of Movement of Food Sources on Amount of Food Eaten by Gray Squirrels | Naomi Rubin Abigail Ostriker | TPM TPM |
| J116 | The Effect of the Number of Tasks to Be Completed on the Accuracy and the Speed of Completing the Tasks | Doyung Lee Eric Huang | TPM TPM |
| J117 | The Effect of Time Pressure on Accuracy | Brendan Chang Vikash Sahu | RCM RCM |
| J118 | The Influence of the State of Psyche and Mental Capabilities on Memory Aptitude of Humans | Abhishek Desai | TPM |
| J119 | The Minds of Boys and Girls: Similar or Different? | Mia Kim Niti Dharwadkar | RCM RCM |
| J120 | The Mozart Effect: True or False? | Damini Kunwar Anuradha Banerjee | RCM RCM |
| J121 | Will Students Be More/Less Willing to Recycle If They Are Paid For It At Various Time Increments? | Micah Brotherton | FCMS |
| J122 | Music vs. Memory | Busola Odubayo | RCM |

BIOCHEMISTRY

| | | | |
|------|---|------------------------------|------------|
| J201 | Can a Carrot Blow a Balloon Up? | Erin Rutter Kayla Johnson | AGM AGM |
| J202 | Studying Baker's Yeast Sugar Metabolism | Sajjad Soltanmohammadi | MCS |
| J203 | The Effect of pH on Egg White Protein | Myles Wagner | TPM |
| J204 | The Effects of Lemon Juice on the Oxidation of Certain Fruits & Vegetables | Alessandra Breen | SAA |
| J205 | Transesterification of Vegetable Oils using Ethanol/Methanol to Extract Biodiesel | Nivetita Ravi | NEM |

BIOLOGY

| | | | |
|------|-------------|-------------------------|------------|
| J301 | Afterimages | Jennifer Gan Yi Yang | RCM RCM |
|------|-------------|-------------------------|------------|



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| J302 | Bone Strength: Do Free-Range Chickens Fed an Organic Diet Have Stronger Bones? | Samantha Bauer Katharine Manor Megan Glaser | EWM EWM EWM |
| J303 | Can an Egg Withstand Greater Force From One Direction Than From Another Direction? | Rosemary Kepple | NBM |
| J304 | Can Flower Color Be Altered By Injecting The Bulb With Dye? | Lindsay D'Andelet | FCMS |
| J305 | Cloning: Future Hope for Extinct Species | Jessica Shi | TPM |
| J306 | Codename: Chrysalis | Kassa Alemayehu | PLM |
| J307 | Differential Survival of Cells Isolated From Young Versus Old Mice Exposed to DNA Damaging Stresses | Kira Finkel | JDS |
| J308 | Does Magnetism Affect the Growth of Plants? | David Sales | PLM |
| J309 | Does Rainfall Predict the Bacterial Levels in the Potomac River? | Robin Danielsen | RCM |
| J310 | Does the pH of Water Affect the Decomposition Rate of Vegetation? | Matthew Hsieh | FCMS |
| J311 | Does Weed Killer In The Soil Affect Later Plant Growth? | Lucy McDonald | FCMS |
| J312 | Energy Drinks: A Can of Bull? | Eleanor Quinn-Gibney | NBM |
| J313 | Growing to the Light | Andrew Delcid | PLM |
| J314 | Growth of Pea Plant in Different Types of Soil | Ankit Sarkar | CJM |
| J315 | How Cloned Plants React to Soil Variations | Leslie Sterling | CJM |
| J316 | How Does Magnetism Affect Plant Growth? | Jake Koenig | PLM |
| J317 | How Does The Amount of Vegetation Effect Air Temperature in a Controlled Environment? | Rachel Sniffen | JDS |
| J318 | How the Brain Works with the Body | Ruchi Agnihotri Sruthi Vijayakumar | PLM PLM |
| J319 | Hydroponics vs. Potting Soil Relative to the Root of a Marble Queen Pothos Plant | Mariyam Sheidu | RCM |
| J320 | Is Vitamin C Effective In Fighting Cancer In Plants? | Kari Schweiger | FCMS |
| J321 | Light Color's Effect on Plant Growth | Chris Lawless | FCMS |
| J322 | Photosynthesis vs Respiratiob | Sarah Gitterman | EWM |
| J323 | Plant (Lucky Bamboo) Experimentation | Alexander Ho | RCM |
| J324 | Plant Container Size Effect on Plant Growth | Austin Moore | FCMS |
| J325 | Rate of Growth Comparison Between Earth and Space Plant Seeds | Kidest Fikremariam Lee Natalie | PLM PLM |
| J326 | Termites: Heating Up the Trails | Madeline Dunn Caitlin DeSantis Caroline DeSantis | SAA SAA SAA |
| J327 | The Effect of Light On Plants | James Williams | SLM |
| J328 | The Effects of Colored Light on the Electrical Potentials of Aloe Vera Plants | Michael Roberts | RCM |
| J329 | The Effects of Soil pH on Black Bean Growth | Kripa Shyamakrishnan | Other |
| J330 | What is the Effect of Vitamins on the Growth of Mung Bean and Spinach Plants? | Clare Liu | RCM |
| J331 | What's On The Menu at Deer Cafe? | Justin Dice | JPM |
| J332 | Will a Bean Sprout Grow Faster in Water, Soil, Sand, Or Air? | Olukayode Ajenifuja | FCMS |
| J333 | Will it Live or Will it Die? | Tiffany Ogundipe Tonia Ogundipe | SAA SAA |

CHEMISTRY

| | | | |
|------|---|---------------------------------|------------|
| J401 | Advil Agony | Julie Kwong Maria Nasios | AGM AGM |
| J402 | Can Mothers' Nightmares Be Fixed? A Study of Stain Removers | Lauren White Madeleine Boies | SAA SAA |
| J403 | Chlorine In Water | Alice Gindin Lisa Johnsen | CJM CJM |
| J404 | Clearosol for Fruits | Ariel Hsu | TPM |



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| J405 | Corrosion of Iron | Felix Zhou | RCM |
| J406 | Do Colored Candles Burn at a Different Rate Than White Candles? | Nebiyat Zewdie | FCMS |
| J407 | Does Temperature Affect the Ripening Time of Bananas? | Joshua Vargas | FCMS |
| J408 | Evaporation | Brandon Taylor | SLM |
| | | Daniel Zinn | SLM |
| J409 | Going Nuts Over Energy | Nicolas Diaz | SCL |
| | | Daniel Ebner | SCL |
| | | Erik Kaniecki | SCL |
| J410 | How Concentration of Epsom Salt and Sugar Affect Electroplating | Berrigan Jack | EWM |
| J411 | How Do Various Types of Fats Affect the Outcome of Sugar Cookies? | Tiffany Le | RCM |
| | | Emily DiMambro | RCM |
| J412 | How Does Changing the Liquid Being Heated Affect How Fast the Heat Gets Absorbed? | Laura Sachs | MLM |
| J413 | How Does the Amount of Sugar Affect The Height of Rock Candy? | Rebecca Miller | MLM |
| J414 | How Does the Brand of Crayon Affect the Melting Rate? | Erin Ingeholm | MLM |
| J415 | How Does the Brand of Paper Towel Affect the Amount of Water it Absorbs? | Elise Tierney | MLM |
| J416 | How Does the pH Level of a Liquid Affect Its Corrosive Powers on a Tooth | Elliott Byrne | EWM |
| J417 | Impermeability of Aluminium Foil | Jessica Brito | SCL |
| J418 | It's Electrifying | Lindsay Poss | JPM |
| J419 | Meltdown | Joan Sergay | WEM |
| J420 | Physical Properties of Water and Various Other Solutions | Hiroshi Furuya | RCM |
| | | Edwin Rosemond | RCM |
| J421 | Purple as Violet, Red as Rose, or Green as Frog? | Kyle Starost | RLM |
| J422 | Salt in a Hydrogen Fuel Cell | Joey Smiga | LPM |
| J423 | Crystallization: How Much Does Evaporation Affect the Growth of Crystals? | Marc Torres | RCM |
| J424 | Testing pH Levels in Rock Creek Park | Llauren Kawahara | SCL |
| J425 | Testing the Speed of Corrosion on Commonly Used Metals In Salt Water Conditions | Jonathan Kau | RCM |
| J426 | The Effect of Sunlight on Different Fabrics | Jiaqi Li | RCM |
| | | Cydney Nguyen | RCM |
| J427 | What is the Effect of Temperature On the Growth of Sugar and Salt Crystals? | Natalia Aguirre | RCM |
| J428 | Which Ingredient In Shampoo Affects The Strength of Human Hair? | Wingnay Ng | FCMS |
| J429 | Which Ingredient in Soap From Different Time Periods Kills the Most Bacteria? | Lauren Kucinski | FCMS |
| J430 | Will Popcorn Kernel's Popping Time Be Affected By The Viscosity/Thickness of the Oil? | Lena Wrightson | FCMS |
| J431 | What Happens to Flubber When The Ingredients Are Flubbed | Adam Zamostny | SLM |

COMPUTER SCIENCE

| | | | |
|------|---|--------------------|------|
| J501 | Electromagnetic Radiation Emitted From Household Electronic Devices | Nancy Schwartz | FCMS |
| J502 | Encryption Algorithm Types vs. Security Level | Jack Zhu | PLM |
| | | Bruce Yuen | PLM |
| | | Andrew Zhang | PLM |
| J503 | Profile of Average Traveler Based on Review Extraction Data | Daniel Galitsky | PLM |
| J504 | Programming a Caesar Cipher Encryption with Visual Basic | Kevin Li | PLM |
| | | Daniel Luu | PLM |
| | | Matthew Caramanico | PLM |

EARTH AND SPACE SCIENCE

| | | | |
|------|--|---------------|------|
| J601 | Does The Texture of The Ground Surface Affect The Greenhouse Effect? | Ryan Lee | FCMS |
| J602 | Effects of Various Structures on Resistance to Earthquakes | Eric Yi | TPM |
| J603 | Geomagnetic Field Fluctuations | Miles King | CJM |
| J604 | How Does Color Affect Heat Absorbtion? | Valentina Duk | PLM |



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|------|---|--------------------|-----|
| J605 | Impact Craters On Earth | Pradip Ramamurti | WOM |
| J606 | Mega Tsunami Height Relative to Ocean Depth | Hannah Terwilliger | EWM |
| J607 | Nova Searches In The Andromeda Galaxy | Devin Luce | PLM |
| | | Elizabeth Meier | PLM |
| | | Jonathan Fink | PLM |
| J608 | Temperature Effects on Material Durability | Wayne Kueh | RCM |
| J609 | The Effect of Sunspots on Radio Telescope Data | Phillip Christman | PLM |
| J610 | The Effect That the Moon's Longer Day-Night Cycle Will Have on the Biological Clocks of Living Things | Srividya Murthy | PLM |
| J611 | The Physical Properties of Snow | Anastasia Laurenzo | PLM |
| | | Christine Junod | PLM |
| J612 | Tracking into the Future | Michael Aubertin | EWM |

ENGINEERING

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|------|---|--------------------|-----|
| J701 | Accurate Robot Motion Control and Measurement | Victor Ying | RCM |
| J702 | Airplane Stabilizers | Wali Rifai | RLM |
| J703 | Battery Experiment | Justin Lee | JPM |
| | | Marcel Bell | JPM |
| J704 | Building a Guitar Amplifier | Idris Battou | PLM |
| J705 | Can Onion Skins be Converted into Useful Paper? | Megan Rider | EWM |
| J706 | Candle Burning | Marco Hamins | CJM |
| J707 | Catapults 101 | Iverson Tucker | EWM |
| J708 | Catapult Efficiency | Ofer Kimchi | JDS |
| | | Nathaniel Schwartz | JDS |

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| J709 | Catapults, Trebuchets, and Onagers | Daniel Du | RCM |
| | | Pei-Nan Chen | RCM |
| J710 | Do Traffic Calmers Save You or Endanger You? | Hannah Dario | AGM |
| J711 | Does The Shape of a Pine Model Affect How Quickly It Loses Heat? | Minas Benyamin | FCMS |
| J712 | Does the Temperature of a Bridge Affect How Much Weight It Will Hold? | Philip Anklesaria | FCMS |
| J713 | Effect of Weight Distribution on the Ability of a Building to Withstand an Earthquake | Tim Souders | SLM |
| J714 | Egg Drop Machines | Christopher Colwander | PLM |
| J715 | Food Plate Heater | Ankush Tatwadhia | RCM |
| J716 | Fuel Efficient Cars | Keven Dubon | PLM |
| | | Jay Sanchez-Paz | PLM |
| | | Hassan Ndow | PLM |
| J717 | Gliders: Effect of Aspect Ratio on Flying Distance | Ollen Douglass | CJM |
| J718 | Hal 900: Building and Programming an Intelligent House | Christopher Silvia | PYM |
| J719 | Hard Charging: How Does Electrical Current Affect the Hardness of Portland Cement? | Mary Kate Macedonia | NBM |
| J720 | How Do Rocket Nose Cone Shapes Affect Aerodynamic Drag? | Peter Routson | RLM |
| J721 | How Pullout Strength of Screws Vary with Wood Type | Alexander Eierle | CJM |
| J722 | How Strong are Spaghallows? | Saaraa Farooq | AGM |
| | | Jessica Bruce | AGM |
| J723 | How Wing Shapes Affect Lift | Julian Raul | SAA |
| J724 | Hydro-Power | Thomas McHale | NBM |
| J725 | Insulation of Beverage Containers | Temi Akisanya | FCMS |
| J726 | M.R. Fluid | David Santos | PLM |
| | | Brook Shoemaker | PLM |
| | | Anthony Vos | PLM |

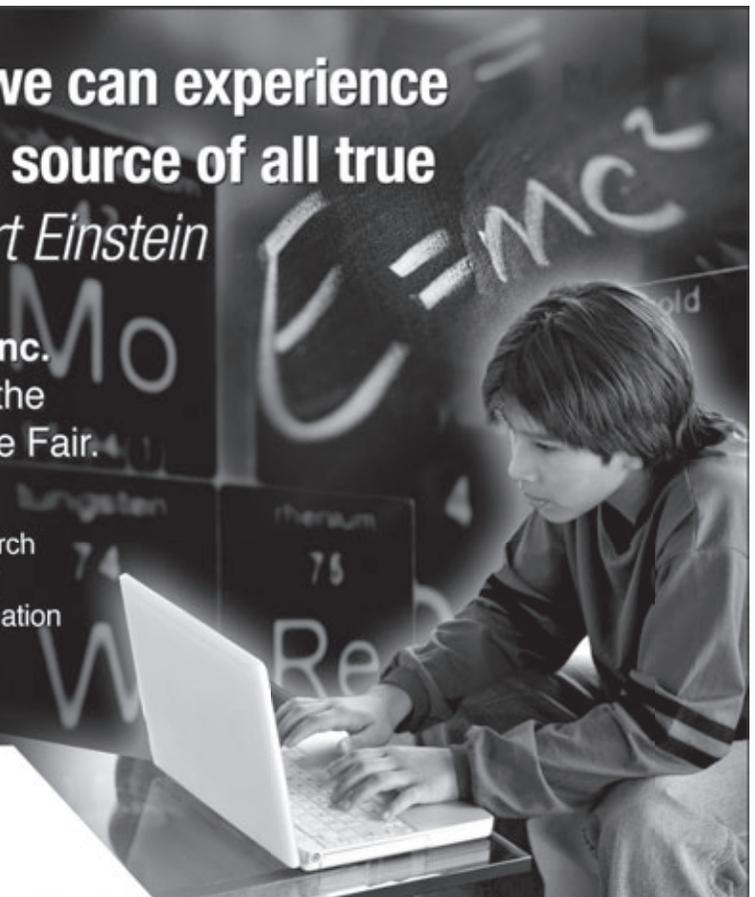
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| J727 | Power Strings | Taiybah Hessami | MCS |
| J728 | Robotics~Hits the Mark Every Time! | Chandrika Nama | PLM |
| J729 | Rocket Aerodynamics: Which Nosecone is Most Aerodynamic? | Kelvin Chang Manju Shivacharan | PLM PLM |
| J730 | Rubber Band Powered Maglev Train | Roy Zhou Josh Chang | CJM CJM |
| J731 | Ship Hull Shape vs. Ability to Carry Weight | Nicholas Tam | FCMS |
| J732 | Solar Ovens and Their Reflectors | Mopewa Ogundipe | PLM |
| J733 | Solar Panel Efficiency: Effect of Angle Toward the Sun on Power Generated by a Solar Panel | Vinay Sriram | RCM |
| J734 | Sound Effects in Music | Jamie Palmer | RCM |
| J735 | Testing the Strength of Wood | Sammy Fleri Vincent Torchia | SAA SAA |
| J736 | The Effect of Grid Size and Color Complexity on Visual Memory Capabilities | Kevin Chiang | TPM |
| J737 | The Effect of Temperature on the Output Power of Silicon Solar Cells | Camaryn Kerns Ally Flechsig | SAA SAA |
| J738 | The Effect of the Design of a Mars Rover on the Rover's Performance | Philip Sequeira | TPM |
| J739 | The Effect of Use of Movable Insulation on Optimum Window to Wall Area Ratios | Melodi Anahtar | TPM |
| J740 | The Effects of Foundation Design on the Shifting Distance of Levees Under Pressure | Nina Lu Victoria Pai | TPM TPM |
| J741 | The Faraway Bird Feeder | Parinaz Fathi | MCS |
| J742 | The Relationship Between the Shape of a Pier and the Load It Can Bear | Amanda Filie | CJM |
| J743 | The Strongest Combination of Wood and Glue | Rohit Samson | PLM |
| J744 | What Are Some Ways to Make a Room More Energy Efficient? | Grace Thompson | FCMS |
| J745 | What Tunnel Portal Configuration will have the Least Amount of Wind Velocity and Noise Level? | Elena Choong | SCL |
| J746 | What Type/Style of Light Bulb Generates the Most Heat? | Sophia Coates | JPM |
| J747 | Which Bridge Type is Strongest Over a Short Bridge Span? Arch, Beam, or Suspension? | John Marc Charpentier | SLM |
| J748 | Which Fruit Produces the Most Electricity? | Andrew Givens Madhav Paul Vishal Hemnani | PLM PLM PLM |
| J749 | Will the Breaking Point of an Item, Once It Has Reached Its Elastic Limit, Change When More Weight Is Added? | David Hylton | FCMS |
| J750 | Wooden Arches | Nicholas VonUtter James Farace | SAA SAA |
| J751 | Which Type of Solar Cells Are Best Fit For Use In Solar Panels? | Vishnupriya Kareddy | PLM |

ENVIRONMENTAL SCIENCES

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|------|---|--|-------------------|
| J801 | Acid Rain? The Effect of Rain Water on the Development of Marigold Plants | Hannah Kebede | MLM |
| J802 | Animal Bedding--Which is the "Quicker Picker-upper"? | Madeline Poss | JPM |
| J803 | Can Common Algae Revitalize Burnt Soil? | Brandon Wong | JPM |
| J804 | Can Plants Rock Like We Do? | Zachary Al-Radienedeh | MLM |
| J805 | Climate Change and Global Warming | Paul Vitaliti | MGS |
| J806 | Different Lights for a Solar Cell | Colin Lester | SAA |
| J807 | Does The Shape of a Solar Oven Affect Its Cooking Speed? | Darren Tong | FCMS |
| J808 | Fabulous Fescue | Otito Greg-Obi Kristin McCawley Katie Bergmann | SAA SAA SAA |
| J809 | Global Warming: Help is as Close as Your Backyard | Deborah Ehrenreich | SAA |
| J810 | Global Warming: Man's or Nature's Fault? | Ellen Gira | CJM |



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| J811 | Heat Retention of Ground Coverings | Kristina Krozak Caileigh Stirling Samantha Pisner | PLM PLM PLM |
| J812 | How Long Does It Take To Heat a Solar Oven to 300 Degrees Fahrenheit With Various Angles of Sunlight? | Brook Yohannes | FCMS |
| J813 | Recycled vs. Non- Recycled Products | Victoria Vini Ana Estimo Kristin Jones | PLM PLM PLM |
| J814 | Seeds in Space: Can They Take the Cold ? | Joy Dangerfield | PLM |
| J815 | Testing the Effect of Silver Nanoparticles on Aquatic Organisms | Eric Keen | HS |
| J816 | The Ability of Different Filter Materials to Purify Drinking Water | Doyin Ayo | FCMS |
| J817 | The Effect of Carbon Dioxide on Plant Growth | Marlee McPherson Leah Muskin-Pierret | TPM TPM |
| J818 | The Effect of Common Appliances and Motorized Vehicles on the Carbon Footprint of a Certain Area | Jerome Glick | TPM |
| J819 | The Effect of Different Forms of Fertilizer on Plant Growth | Brian Heligman | RCM |
| J820 | The Effect of Different Levels of Carbon Dioxide on the Temperature of a Closed Environment | Samantha Schweickhardt Becca Arbacher | TPM TPM |
| J821 | The Effect of Different Pollutants on a Plant's Growth and Development | Nadia Turner | TPM |
| J822 | The Effect of Soil Amendments on the Rate of Germination of Marigold Seeds | Samuel Kebede | SLM |
| J823 | The Effect of the Primary Source of Energy Used to Power a Stirling Engine on the Engine's Efficiency | Nicole Brimmer | TPM |
| J824 | The Effect of Water on Decomposition | Adam Anderson | CJM |

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| J825 | The Effects of Liquids on Plants | Kelsey Busch | RCM |
| J826 | The Plant that Cools the Temperature Best for Green Roofs | Nancy Kim | HOA |
| J827 | Tree Disease Incidence in Three Deciduous Species | Sophie Cameron | HS |
| J828 | Using a Filter for Car Exhaust | Zenebech Mesfin | FCMS |
| J829 | Variation in Output of Solar Cells with Angle to the Sun | Mara Pugh | CJM |
| | | Hannah Burr | CJM |
| J830 | Vitamins and Plants | Leah Sukri | RCM |
| J831 | Water Pollution and Water Quality | Nia Edwards | FCMS |
| J832 | Water Quality Testing in Lake Whetstone and North Creek Lake | Priyanka Patel | ROM |
| | | Shreya Barthwal | RCM |
| J833 | Water Velocity's Effect on the Number of Organisms Found in a Stream | Elizabeth Axley | EWM |
| J834 | What Color Light do Plants Grow Best In? | Nadia Abutaleb | RCM |
| | | Maggie Reed | RCM |
| J835 | What Is the Effect of Color of Light On Plant Growth? | Nilaja McBeth | RCM |
| J836 | What is the Effect of Olive Oil On Plant Growth? | Daniel Sun | RCM |
| J837 | Where is the Water? | Christy Kawa | WEM |
| J838 | Which Brand of Disposable Diaper is More Absorbent? | Melissa Blanco | SCL |
| | | Karla Rivera | SCL |
| J839 | Which in the Class is the Best Biogas? | Alix Philogene | SAA |
| J840 | Which Surface Texture is Best for Quality of Water in the Chesapeake Bay: Gravel, Dirt, or Grass? | James FitzGerald | FCMS |
| J841 | Working Water: Can Blue-Green Algae Be Used as a Hydroponic Nutrient Solution? | Miranda Lingenfelter | NBM |
| J842 | Population vs. Climate Change | Abi Subramanian | PLM |



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**MATHEMATICS**

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| J901 | Applied Logic in Computer Processing | Catrina Johnson | PLM |
| J902 | Bright, Bright, Light Bulbs | Alan Du | TPM |
| J903 | Counting Cards in Blackjack | Luis Gracian | RCM |
| J904 | Plot a Cardioid | Parastoo Neyzari | MCS |
| J906 | Which Common Random Number Generator is Most Random? | Alice Mukora | PLM |

MEDICINE AND HEALTH

| | | | |
|-------|--|---|-------------------|
| J1001 | Canine Diabetes Research Study | Gerald Welch | RLM |
| J1002 | Desired Amount of Sugar in Drinks Among Teenagers | Neva Gakavian | FCMS |
| J1003 | Do Beverages Stain Human Teeth? | Jessica Hart | FCMS |
| J1004 | How Does the Frequency of Ultrasound Affect the Whitening of Teeth? | Elizabeth Orenstein Julian Moreno Cherie Wang | PLM PLM PLM |
| J1005 | How Much Stress Can the Human Knee Withstand Before Wearing Out Enough to Need Replacing? | Amanda Feagans | FCMS |
| J1006 | Is Your Old Sunscreen Any Good?: The Relationship between Age and Effectiveness in Sunscreens | Michael Hatchett | RCM |
| J1007 | Lotions and Potions: Put Your Skin in Motion | Tanique Philogene | SAA |
| J1008 | The Effect of Playing Video Games On Hand-Eye Coordination | Sagarika Das Anwasha Naskar | TPM TPM |
| J1009 | The Music on Your MP3 Affects Your BP | Lauren Marple Caroline Tribble | EWM EWM |
| J1010 | Veggie or Jelly? | Leyla Roughani | MCS |
| J1011 | What Is The Effect of Different Antibacterial Hand Soaps On Bacteria? | Grant Fox | CJM |
| J1012 | How Have Fitness Levels Changed Over the Past Decades? | Rakhee Jain Anika Jain | RCM RCM |
| J1013 | Intensity of Change in the Level of Knowledge on Pandemic Influenza Among Middle and High School Students Since 2006 | Daniela Mujica | EWM |

MICROBIOLOGY

| | | | |
|-------|---|--|-------------------|
| J1101 | Carbohydrate Content in Various Fruits and Vegetables | Valery Leng Cynthia Gan | RCM RCM |
| J1102 | Dirt on Hands vs. Number of Microbes Found on Hands. | Jonaton Baginski | EWM |
| J1103 | Does Bacteria Type Affect the Speed of Takeover In a Blood Sample? | Pratik Parmar | FCMS |
| J1104 | Does Fermentation Activity of Yeast Change In Different Conditions? | Nicole Arabov Olivia Wasserman | JDS JDS |
| J1105 | Effect of Natural and Commercial Disinfectents on Hand Microflora | Adarsh ETTYREDDY | TPM |
| J1106 | How Long Do We Wash Our Hands and What Type of Cleaning Solution Is the Best Choice to Kill Bacteria? | Mahsan Khalilzadeh | MCS |
| J1107 | Microbial World: More DNA Means More Protein? | Praveen Bachoti | KIM |
| J1108 | Mouthwash and Bacteria | William Cai | TPM |
| J1109 | The Effect of Biofumigents on Nematodes Biofumigents vs. Nematodes | Emma Luigard | TPM |
| J1110 | The Effect of Different Antibacterial Sanitizers on Bacterial Growth | Antara Joardar Arpita Ghosh Sahaana Arumugam | TPM TPM TPM |
| J1111 | The Effect of Light on the Growth of Bacteria | Michael Anderson Benjamin Lowenstein | TPM TPM |
| J1112 | The Five Second Rule: Is It Really Safe? | Madison Cecco | JPM |



PHYSICS

| | | | |
|-------|---|-------------------------|------|
| J1201 | Aerodynamics of Soccer Balls | Carolina Carbajal | PLM |
| J1202 | All Wound Up: Experimenting with Electromagnets | John Yendrey | JPM |
| J1203 | Antibubbles | Dong Kyun Nam | PLM |
| | | Brady Giang | PLM |
| J1204 | Battle of the Home-Built Batteries | Spencer Sampson | AGM |
| J1205 | Color And Heat Absorption | Crystal Leung | FCMS |
| J1206 | Compact Fluorescent Bulbs: Brighter than Incandescent Bulbs? | Paul B. Ellis | SLM |
| J1207 | Cosmic Ray Flux as a Function of Time of Day | Rolando Masís | CJM |
| J1208 | Do Objects Float Better in Salt Water or Fresh Water? | Gabriella Galang | SCL |
| J1209 | Does the Shape of a Toy Torpedo Head Affect How Fast It Sinks In Water? | Caleb Koo | FCMS |
| J1210 | Does the Shape of Ice Affect Melting Time? | Annie Vital | FCMS |
| J1211 | Does the Temperature of Paint Cause It To Peel Or Crack? | Mila Clark | FCMS |
| J1212 | Does Width of Elastic Affect How Far it Launches an Object? | Clarissa Balint | FCMS |
| J1213 | Flashlight with Multiple Magnetic Refractions | Juan Diego Palomino | PLM |
| J1214 | Heat Absorption of Different Colored Concretes | Suzanne Xu | CJM |
| J1215 | Heat and Water | Cory Covington | SAA |
| | | Malik Terry-Wiggins | SAA |
| J1216 | Hovering Vehicles Made of Magnets | Vasily Baffes | PLM |
| J1217 | How Does a Projectile's Shape Affect its Performance? | Pavleen Thukral | RCM |
| J1218 | How Does Weight Affect Speed? | Justin Ho | FCMS |
| J1219 | How Insulation Affects the Cooling of Water | Gabriel Zanuttini-Frank | SLM |
| J1220 | How Many Facets Can a Prism Have And Still Separate Light? | Antonio Wade | FCMS |

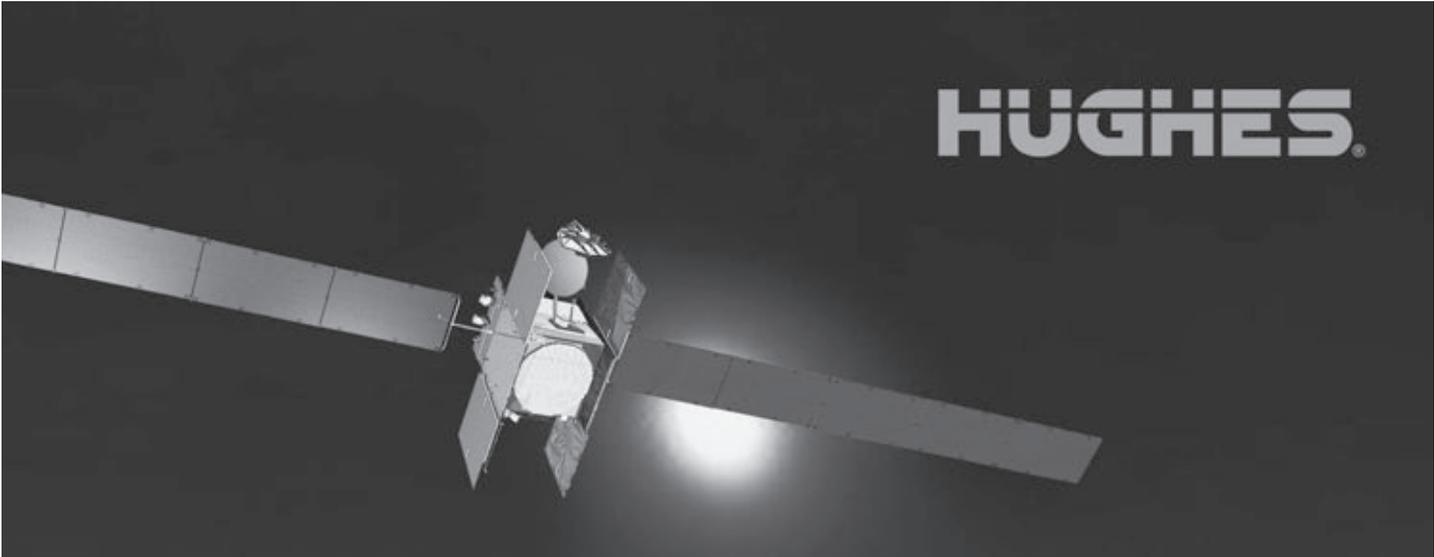
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| | | | |
|-------|---|--|------------|
| J1221 | How Temperature Affects How High a Rubber Ball Bounces | Robert Anthony | SLM |
| J1222 | Is It Moving: How Fast Must a Zoetrope Rotate For an Observer to Perceive Motion? | Ruthie Prillaman Maggie Pelta-Pauls | CJM CJM |
| J1223 | Isochronal Oscillation: The Effect Of Weight, Height, And Length On Harmonic Motion | Oscar Mujica | EWM |
| J1224 | Light Through Fog | Nicholas Brandon | EWM |
| J1225 | Natural Clothing Fibers Burning Time | George Figueroa | FCMS |
| J1226 | Pressure in Liquids | Darya Rahbar | NBM |
| J1227 | Reducing Sound/Noise Pollution With Insulation Barriers | Judith Han | FCMS |
| J1228 | Rubber Band Car | Yasmin Rastegar | MCS |
| J1229 | Running Water Propulsion | Joseph Chilbert | RCM |
| J1230 | Sizzling Hot Rockets | David LoBosco | EWM |
| J1231 | Solar Energy Home | Abhinav Jambulingam | AGM |
| J1232 | Sound Meltdown | Samuel Alterman | WEM |
| J1233 | Sparking Electrodes | Garrett Foss | EWM |
| J1234 | Stretch It Out | Khalid Suliman | AGM |
| J1235 | Surface Tension Science Expo | Paul Relph | NBM |
| J1236 | The Catapult | Prashan Dharmasena | EWM |
| J1237 | The Effect of Temperature on the Bounce of a Baseball | Aanchal Johri Sandhya Taneja | TPM TPM |
| J1238 | The Effectiveness of Sound Barriers on Highway Traffic Noise | Shaun Datta | TPM |
| J1239 | The Effects of Blade Pitch on Wind Turbine Efficiency | Daniel Rivers | PLM |
| J1240 | The Physics of Pool | Matthew Baney | RCM |
| J1241 | The Reflectivity of a Medium Using a Laser Pointer and Beam Splitter to Measure Reflectivity with an Interferometer | Benjamin Strouse | PLM |
| J1242 | The Relationship Between Temperature and the Elasticity of Rubber Bands | Emily Kowal | CJM |
| J1243 | The Variables of Weight Lifting | Charles Yin | TPM |
| J1244 | Thermoelectricity: What Changes with Different Connections and Materials? | Scott Parsons | PLM |
| J1245 | What Goes Up Must Come Down | Ryne Vanderwolf | AGM |
| J1246 | What is the Effect of the Design of a Paper Airplane on its Speed? | Daniel Joseph | RCM |
| J1247 | Which Type of Sunscreen Protects The Best? | Brenna Means | CJM |
| J1248 | Which Variable Is Most Important When Trying to Curve a Soccer Ball? | Alan Zhang Jose Bordon | PLM PLM |
| J1249 | Wood vs. Aluminum | Scott Boyd | AGM |
| J1250 | Temperature Blowout | Stacey Mathew Cheryl Wang | AGM AGM |

STUDENTS IN THE SENIOR FAIR

BEHAVIORAL AND SOCIAL SCIENCES

| | | | |
|------|--|--|-------------------|
| S101 | An Eye-Popping Memory Technique | Nikki Duong Andrew Vu | SWH SWH |
| S102 | Birth Order vs. IQ | Kerry Collins Abrafi Mensah Amanda Muana | SWH SWH SWH |
| S103 | Can You Dream Your Way Back to Your Yesteryears? | Jacob Lowe Kenneth Lee | SWH SWH |
| S104 | Do Brand Names Taste Better? | Josh Gale | SWH |
| S105 | Do You Feel the Music? | Laura Weber | SWH |



| | | | |
|------|---|----------------------|-----|
| S106 | Do You Know Your Colors? | Amber Singh | SWH |
| | | Shannon Lee | SWH |
| | | Amrita Balram | SWH |
| S107 | Drawing a Blank | Stephen Ajamian | SWH |
| S108 | Gender in School | Marteki Martey | BLH |
| S109 | Hear, Here! | Melanie Fajardo | SWH |
| | | Chris Palumbo | SWH |
| | | Jen Chiogioji | SWH |
| S110 | Highlighting Your Memory | Gerald Charles III | SWH |
| | | Ben Warsaw | SWH |
| | | Ashish Ahuja | SWH |
| S111 | Memory Madness | Brittany Mills | SWH |
| | | Rachel Iacangelo | SWH |
| | | Alex Proctor | SWH |
| S112 | Mouthful of Memory | Elizabeth Collins | SWH |
| S113 | Once Upon An Ad... | Elisabeth Hicok | SWH |
| | | Shana Leotta | SWH |
| S114 | Psych Out Your Appetite | Liz Kubis | SWH |
| | | Emily Byrne | SWH |
| S115 | Remember When...? | Rajat Nibber | SWH |
| | | Jonathan Lim | SWH |
| | | Kevin Hillman | SWH |
| S116 | The "Phinest" Face | Amy Palumbo | SWH |
| S117 | The Effect of Age on a Horse's Interaction with Other Horses. | David Shcherbelis | WHO |
| S118 | The Great Affect of Sleeping | Lawrence Stringfield | SWH |
| | | Jahmar Thomas | SWH |
| | | Nael Babaa | SWH |

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| | | | |
|------|---|--|-------------------|
| S119 | The Influence of Gender on Moral Priorities | Caroline Diehl | BCH |
| S120 | Typing Under the Influence (Of Caffeine!) | Jill Badin | SWH |
| S121 | Video Games and Aggression | Jacob Dinerman Zachary Schwartz Maddie Pettenati | SWH SWH SWH |
| S122 | Which Type of Memory is Better for Remembering Phone Numbers? | Christopher Hawkins | SWH |

BIOCHEMISTRY

| | | | |
|------|---|------------------|-----|
| S201 | Anticancer Drugs Targeting DNA Topoisomerase I | Evan Scher | SWH |
| S202 | Change of pH In Orange Juice and Its Affect On People With Acid Reflex | Milano Tesfaye | BLH |
| S203 | Determining the Role of Akt-1 in Cell Proliferation and Death During Ventricular Zone Development in Embryonic Mice | Priyanka Gokhale | BLH |
| S204 | Development of Plant Resources for K12 and Undergraduate Education in Genetics | Re-I Chin | WJH |

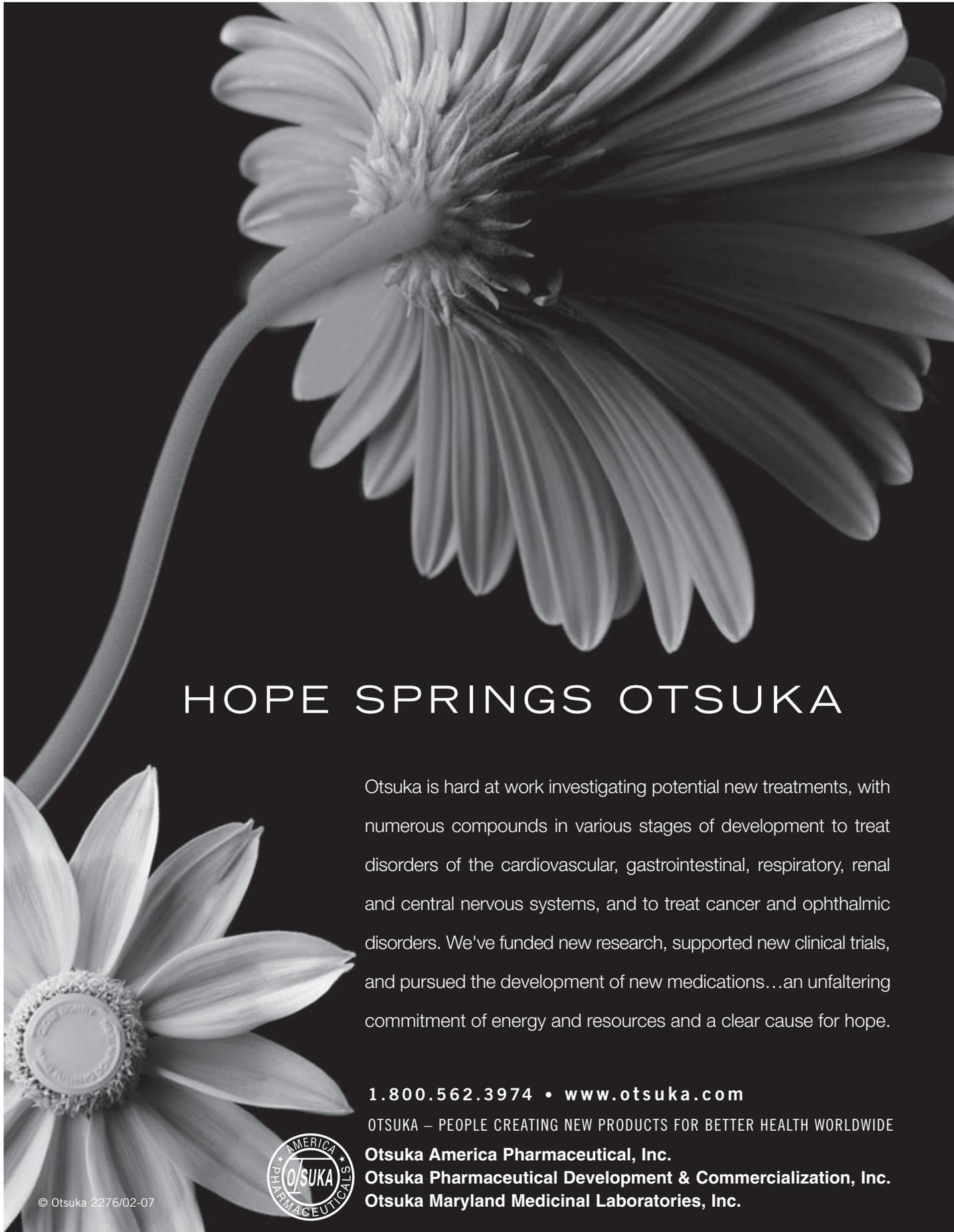
BIOLOGY

| | | | |
|------|---|---|-------------------|
| S301 | As Scarce as Hens' Teeth: A Bioinformatics Approach to the Search for Tooth Related Genes in the Chicken Genome | Rachel Hart | WHO |
| S302 | Cold Acclimation In Blue Grape Hyacinth | Margaret Gratian | ROH |
| S303 | Effects of Mold on Drosophila Melanogaster Population. | Tim Wood | SWH |
| S304 | Effects of Radiation on Seeds | Ethan Dubin | SWH |
| S305 | Fluorescent vs. Incandescent | Julia Kim Andrew Midgette | SWH SWH |
| S306 | Get More than Gasoline at the Service Station | Miranda May | BCH |
| S307 | How Light Affects Stomata Production | Katherine Rentas Kristen Steiner Jessica Levy | SWH SWH SWH |

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|------|--|--|-------------------|
| S308 | Magnet Plant | Hailu Molla Tyler Robinson | SWH SWH |
| S309 | Microorganisms vs. Heat | Cecilia O'Brien Brittanie Prakash Nayoung Kim | SWH SWH SWH |
| S310 | Multiple Differentiation of Mesenchymal Progenitor Cells Derived from Traumatized Muscle | Jeffrey Blazar | GBH |
| S311 | Power Plants | Michael Lim | SWH |
| S312 | Predatory Habits of Maryland's Gamefish Population | Robert Witkop Andrew Tauber | BCH BCH |
| S313 | The Effect of Blacklite on Chlorella | Daniel Jacobs Joelle Demgne | SWH SWH |
| S315 | The Effect of Light Conditions on Cricket Chirping | Jonathan Chan Dakari Quimby Vincent Ho | SWH SWH SWH |
| S316 | The Effect of Light Intensity on Photosynthesis | Bryan Rosenthal Alejandro Mantilla Yassir Zan Cheema | SWH SWH SWH |
| S317 | The Effect of Pollution on Plants | Jacob Dickson Kyle Johnson | SWH SWH |
| S318 | The Effect of Soil Toxins on Lettuce Seed Germination | Gregory Maines | SWH |
| S319 | The Memory of Goldfish | Solomia Zavalij Lisa Crawford | SWH SWH |
| S320 | The Reason Why Spiderman Works Better At Night | Christopher Kim Justin Lee | SWH SWH |

CHEMISTRY

| | | | |
|------|---|--|-------------------|
| S401 | A Picture Is Worth a Thousand Words | Maija Mikkelsen | ROH |
| S402 | Chemical Components of Motor Oil and Their Individual Effects on Bean Plant Growth | Michael Center | CCS |
| S403 | Chromatography | Jeimy Rodriguez Mayra Garcia | BLH BLH |
| S404 | Energy Stored in Compounds | Nat Enelow Taylor Brent | BCH BCH |
| S405 | Lead Content Variability in Toys | Hien Truong Sydney Rosebraugh | SWH SWH |
| S406 | Protection Against Corrosion | Zachary Hopkins | SWH |
| S407 | Utilization of Solid Metal Waste for Power Generation Using Semi-Fuel Cell Technology | A. Sarada Rao | WWH |
| S408 | Why Refrigerate Juice? | Elliott Lane Eric Galson Matthew Jaffe | BCH BCH BCH |
| S409 | Will It Hold Water? The Effect of Different Levels of pH of Water on Pipe Materials | Abby Klein | BCH |
| S410 | Yeast Reproduction with Sugar Substitutes | Rajat Shivacharan | WMH |

COMPUTER SCIENCE

| | | | |
|------|--|-------------------------------|------------|
| S501 | A Monotone Characterization of P | Louis Wasserman | BLH |
| S502 | Algorithms for the Control of Distant Vehicles | Peter Mayhew Andrew Crouch | BCH BCH |
| S503 | Java Ant Farm Simulation | William Paintsil | BLH |
| S504 | Solving Sudokus in Parallel | Jacob Hurwitz | BLH |

ENGINEERING

| | | | |
|------|---|----------------|-----|
| S701 | An Investigation into Wireless Fidelity | David Atkinson | BCH |
|------|---|----------------|-----|



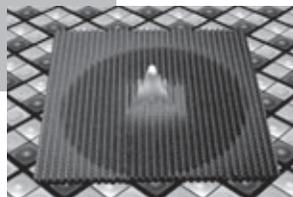
| | | | |
|------|--|---|-------------------|
| S702 | Biodiesel Oils | James Binns Benjamin MacLeod Jeffrey Shanks | BLH BLH BLH |
| S703 | Bombast Bridges | Konnor Bursaw Santiago Morales | SWH SWH |
| S704 | Changing the Structure of Aeroplanes to Make Them Faster and More Efficient | Nicky Arya | BCH |
| S705 | DNA Attachment to GaAs Substrates | Melody Alsheikhly Femi Pai | CHH CHH |
| S706 | Dynamics of Fluid Flow Around Aerofoil, Airplane and submarine: Effect of winglets | A. Yashodhara Rao | WWH |
| S707 | Investigation of Expansion and Deployment Methods of a Radar Calibration Sphere | Eric Chen | CHH |
| S708 | Natural versus Conventional Insulation | Francie Jaffe | BCH |
| S709 | New vs Used Vegetable Oils Biodiesel | Olivia Bozik Areeb Quasem | BLH BLH |
| S710 | Pneumatic Motor | Greg Daines | BCH |
| S711 | Strength of Structures | Victoria Gersh | BCH |
| S712 | The Effect on Speaker Box Insulation on Subwoofer Sound Quality | Simon Mait | BCH |
| S713 | Turbine Dynamics | John Swann | QOH |

ENVIRONMENTAL SCIENCES

| | | | |
|------|---|--|-------------------|
| S801 | Are Ants Scared of Peppermint Oil? | Elijah Martin Michael Lu | WHO WHO |
| S802 | Battle of the Beast: Cow vs. Pig | Katie Quirk | SWH |
| S803 | Chemical Components of Motor Oil and Their Individual Effects on Bean Plant Growth | Paul Hogan Patrick Hearle | BCH BCH |
| S804 | Does Acid Affect Plant Growth? | Shivali Choxi Kieran Sweeney | SWH SWH |
| S805 | Greywater: Can Plants Handle It? | Madison Yeutter | BCH |
| S806 | School Water Safety | David Fillinich Jon Dutko | BCH BCH |
| S807 | The Allelopathy of Velvet Beans on Lettuce | Simthana Islam Eden Yilma | BLH BLH |
| S808 | The Effect of Fertilizer on the Dissolved Oxygen of Water | Joshua St.Pierre Will Bataller Kenny Rosenberg | SWH SWH SWH |
| S809 | The Effect of Moisture on Green Design Building Insulation Materials: Wool, Straw, Cotton, and Comoset | Jeremy Melmed | BCH |
| S810 | The Fading Shorelines | Diane Bickel | SWH |
| S811 | The Gas Blanket | Daniel Choquette Kyle Le Thomas Blackmon | SWH SWH SWH |
| S812 | The Production of Methane in a Two-Chamber Bio-catalyzed Microbial Fuel Cell Utilizing Methanosarcina barkeri | Sikandar Porter-Gill | GBH |
| S813 | The Unexpected House Dust Accumulation in Relation to the Position of the Sun | Melissa Truong Shennon Lu Krista Fryauff | BLH RMH POH |

MATHEMATICS

| | | | |
|------|---|----------------|-----|
| S901 | A Statistical Analysis of LED Light Energy | Katie Kauffman | SWH |
| S902 | Analysis of Baseball Win Expectancy Formulas | Max Valenstein | BCH |
| S903 | Chip-Firing Analysis of Stabilization Behaviors, Hitting Times, and Candy-Passing Games | Paul Kominers | WWH |



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**MEDICINE AND HEALTH**

| | | | |
|-------|--|--|-------------------|
| S1001 | A Study of Cardiology and Health | Sonali Kumar | SWH |
| S1002 | Bioinformatics Analysis of Neurofibromin: Does Vitamin A Have a Role in Neurofibromatosis? | Sameera Bachoti | NWH |
| S1003 | Comparison of Brain Activity During Periods of Active and Passive Finger Movements | Sitara Weerasuriya | SWH |
| S1004 | Discovering New Splicing Forms in Von Willebrand Factor to Understand Clotting Diseases | Yiwei Li | SVH |
| S1005 | Forget Me Not | Yasamin Abbaszadeh Rachel Kane | SWH SWH |
| S1006 | Mapping of Mutant Gene Causing Structural Heart, Eye, and Limb Defects in Mice. | Tania Chatterjee | MGH |
| S1007 | PCR Amplification of Malaria Parasites from Dried Human Blood | Eric Ockenhouse | BCH |
| S1008 | Reaction Time to Touch Stimuli vs. Body Location | James Iocozzia | SWH |
| S1009 | Synergistic Therapeutic Effects of Resveratrol and Cisplatin on BRCA1-associated Breast Cancer Cells | Yang Yang | BLH |
| S1010 | The Heart of a Drink | Brittany Siska Stephanie Forlenza Ashley Wepasnick | SWH SWH SWH |
| S1011 | The Heat and Hair Affair | Priscilla Creppy Judy Nam | SWH SWH |
| S1012 | The Search for Changes in the Conformation of ADAMTS13 Using Specific Antibodies | Chinyere Okunji | PBH |
| S1013 | Urine vs. Body Temperature | Stephan Lee James Koo Kyu Chung | SWH SWH SWH |

MICROBIOLOGY

| | | | |
|-------|--|------------------|-----|
| S1101 | All Histones Are Not Created Equally | Vikram Linga | SWH |
| S1102 | Antibacterial Properties in Household Products | Graciela Saraiva | SWH |
| S1103 | Comparing Genomic Signatures of Pathogenic E. coli and Shigella Bacteria | David Tao | BLH |
| S1104 | Gram Negative Vs. Gram Positive | Nina Goldman | SWH |
| S1105 | How Do Cell Phones Get So Dirty? | Abhinav Agarwal | WHO |



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| S1106 | Identificvation of Genes Differentially Expressed between Non-irradiated and Irradiated Sporozoites of a Live Attenuated Whole Parasite Malaria Vaccine | Benjamin Hoffman | GDS |
| S1107 | Is Bacteriophage B40-8 Gene Product 56 a Homing Endonuclease? | Ilya Papatsenko | WHO |
| S1108 | Sequence Analysis of Prdm2 cDNA Forms | Alexander Bliskovsky | BCH |
| S1109 | Soil Health and the Environment - Maryland State Soil Microorganism Map | Alexander Zhu | POH |
| S1110 | Translational Regulation of an Outer Membrane Protein in Escherichia coli | Alisa Lu | BLH |

PHYSICS

| | | | |
|-------|--|----------------|-----|
| S1201 | Characterization of Fundamental Light Delivery Properties of Nanoscaled Biosensors | Boris Vassilev | BLH |
| S1202 | Comparison of the Energy Efficiency of Light Bulbs | Brina Seidel | BCH |
| S1203 | Remote Control Car's Braking on Various Surfaces | Peter Bowes | BCH |
| S1204 | Temporal, Compositional, and Compressional Behavior of H2-O2 Compound Formed by X-ray Excitation of H2O at High Pressure | Andrew Kung | BLH |



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