

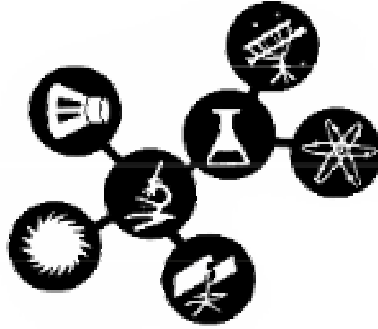
# 57th Annual Prince George's Area Science Fair



*Theme: "Science Across the Spectrum"*

*March 19 and 20, 2005*

*Prince George's Community College, Largo, MD*



## *Prince George's Science Fair Association*

Participation in this Science Fair is open to students of public, private and parochial schools of Calvert, Prince George's and St. Mary's Counties in Maryland.

*Special Thanks to  
Prince George's Community College  
for Hosting the 57<sup>th</sup> Annual  
Prince George's Area Science Fair*



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# Awards Assembly Program

Sunday, March 20, 2005  
Queen Anne Fine Arts Auditorium

Pledge to the Flag .....	Cadet Color Guard, DuVal High School <i>Col. Stephen R. Fisher, USAF (Ret.)</i>
Introduction .....	Mr. James M. Strandquist <i>NASA SHARP Program Manager, Modern Technology Systems, Inc.</i>
Greetings .....	Dr. Aaron Stucker <i>Dean of Science, Technology, Engineering, and Mathematics, Prince George's Community College</i>
Introduction of Speaker .....	Dr. K. Joseph Roberts <i>President, Prince George's Science Fair Association</i>
Keynote Speaker .....	Dr. David Straney <i>Associate Professor of Molecular Genetics, University of Maryland, College Park</i>
Junior Division Awards	Mr. Charles Hansborough <i>Professor of Mathematics, Prince George's Community College</i> Dr. Lloyd McAtee <i>Director, Prince George's Area Science Fair Association</i>
Senior Division Awards .....	Dr. R. Loraine Fulton <i>Deputy Superintendent, St. Mary's County Public Schools</i> Dr. K. Joseph Roberts <i>President, Prince George's County Fair Association</i>
Team Awards.....	Mrs. Jean Kugler <i>Science Specialist, K-12, Prince George's County Public Schools</i>
Robert L. Wistort Best Presentation Awards .....	Ms. Zipporah Miller <i>Supervisor of Science, K-12, Prince George's County Public Schools</i> Ms. Mary Gloster <i>Science Teacher, Patuxent High School, Calvert County Public Schools</i>
Special Awards .....	Mr. Alexander Imholtz <i>Assistant Professor of Biology, Prince George's Community College</i> Ms. Allison Miner <i>Associate Professor, Nutrition Foods &amp; Hospitality Management, Prince George's Community College</i>
Scholarships.....	Presented by Representatives of: <i>Prince George's Community College: Dr. Aaron Stucker</i> <i>University of Maryland, College Park Campus: Dr. David Straney</i> <i>University of Maryland, Baltimore Campus: Mr. Will Harr</i>
Ota Awards.....	Mr. James Strandquist <i>NASA SHARP Program Manager, Modern Technology Systems, Inc.</i>
Howard B. Owens Awards for Best Exhibit .....	Ms. Zipporah Miller <i>Supervisor of Science, K-12, Prince George's County Public Schools</i>
Grand Awards.....	Dr. David Straney <i>Associate Professor of Molecular Genetics, University of Maryland, College Park</i> Mr. Glenn W. Hanes <i>Chairperson, Awards Committee, Prince George's County Science Fair Association</i>
Remarks.....	Dr. K. Joseph Roberts <i>President, Prince George's Science Fair Association</i>

## Keynote Speaker

# David C. Straney

**Ph.D. – Yale University, 1987**

**Associate Professor**

**Department of Cell Biology and Molecular Genetics**

**University of Maryland**

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Fungi have a major impact on agriculture; some cause plant diseases while others act as disease-suppressing (biocontrol) agents. My lab uses the tools of molecular biology to study the molecular determinants in these fungi which allow pathogenic or disease-suppressing ability.

In studying plant pathogens, we are interested in the regulation of pathogenicity/virulence gene expression in response to plant-derived signal molecules. A model for plant-induced gene expression is the plant-pathogen interaction between garden pea (*Pisum sativum*) and the fungus *Nectria haematococca* MPVI (anamorph: *Fusarium solani*), the causal agent of pea stem and root rot. Infection, wounding, or other stresses induce pea to make an isoflavanoid antibiotic, pisatin. *Nectria haematococca* uses pisatin as a signal to induce synthesis of pisatin demethylase, a cytochrome P-450 monooxygenase which detoxifies pisatin. We are studying this pisatin regulation of the pisatin demethylase promoter. We have used the cloned pisatin demethylase gene to apply in vitro methods for defining protein-protein, protein-DNA and protein/small molecule interactions in this signaling pathway, and in studying their role in function through homologous in vitro transcription analysis; in vivo methods, such as fungal transformation of promoter/GUS gene constructs, are used to evaluate the role of these molecular interactions in signaling and disease. We are also studying a second pisatin response in this fungus - that of stimulation of germination by pisatin and related plant flavonoids. This response may be a critical step in the plant-pathogen interaction since, like many soilborne pathogens, the fungal spores remain dormant in the soil until the appearance of a potential host. Flavonoids present an intriguing signal for vegetative growth since their exudation from legume roots are required for initiating plant-Rhizobium interactions which lead to symbiosis and nitrogen fixation. Thus the fungal pathogen and bacterial symbiont appear to utilize the same signal to initiate interaction with the plant. Our goals are to determine the genetic components which determine this response, and the differences in flavonoid specificity which we see between *F. solani* isolates which specialize on different leguminous hosts. A second focus in the lab studies the role of antibiotics produced by *Gliocladium virens* in its ability to suppress damping-off disease caused by *Pythium ultimum*. Gliotoxin is one antibiotic made by this biocontrol agent. Through mutational analysis, we have demonstrated that this antibiotic does contribute to biocontrol activity. We are presently cloning the genes required for gliotoxin biosynthesis to study the regulation of its biosynthesis. Ultimately, we hope to improve the range and effectiveness of *G. virens* biocontrol activity through enhancement of gliotoxin production.

At present I teach an introductory botany course for non-science majors and two graduate courses on pathogenic microorganisms which concentrate on plant-microbe interactions at the organismal, cellular and molecular levels.

# Categories of Competition

**Behavioral and Social Sciences:** Human and animal behavior, social community relationships – psychology, sociology, anthropology, archaeology, ethnology, linguistics, perception, urban problems, reading problems, public opinion surveys, educational testing, etc.

**Biochemistry:** Chemistry of life processes – molecular biology, molecular genetics, enzymes, photosynthesis, blood chemistry, protein chemistry, food chemistry.

**Botany:** Study of plant life – agriculture, agronomy, horticulture, forestry, plant taxonomy, plant physiology, plant pathology, plant genetics, hydroponics, algae, etc.

**Chemistry:** Study of nature and composition of matter and laws governing it – physical chemistry, organic chemistry (other than biochemistry), inorganic chemistry, materials, plastics, fuels, pesticides, metallurgy, soil chemistry, etc.

**Computer Science:** Study and development of computer hardware, software engineering internet networking and communications, graphics (including human interface), simulations/virtual reality or computational science (including data structures, encryption, coding and information theory).

**Earth Sciences:** Geology, mineralogy, physiography, oceanography, meteorology, climatology, astronomy, speleology, seismology, geography, etc.

**Engineering:** Technology; projects that directly apply scientific principles to manufacturing and practical uses – civil, mechanical, aeronautical, chemical, electrical, photographic, sound, automotive, marine, heating and refrigerating, transportation, environmental engineering, etc.

**Environmental Sciences:** Study of pollution (air, water and land) sources and their control ecology.

**Mathematics:** Development of formal logical systems or various numerical and algebraic computations, and the application of these principles – calculus, geometry, abstract algebra, number theory, statistics, complex analysis, probability.

**Medicine and Health:** Study of diseases and health of humans and animals – dentistry, pharmacology, pathology, ophthalmology, nutrition, sanitation, pediatrics, dermatology, allergies, speech and hearing, etc.

**Microbiology:** Biology of microorganisms – bacteriology, virology, protozoa, fungi, bacterial genetics, yeast, etc.

**Physics:** Theories, principles, and laws governing energy and the effect on matter – solid state, optics, acoustics, particle, nuclear, atomic, plasma, superconductivity, fluid and gas dynamics, thermodynamics, semiconductors, magnetism, quantum mechanics, biophysics, etc/

**Space Science:** Technology and research involving space, planetary science, rocketry, etc.

**Zoology:** (Study of animals – animal genetics, ornithology, ichthyology, herpetology, entomology, animal ecology, paleontology, cellular physiology, circadian biorhythms, animal husbandry, cytology, histology, animal physiology, invertebrate neurophysiology, studies of invertebrates, etc.

**Teams:** Study conducted by two or three students in any discipline.

# JUNIOR DIVISION EXHIBITORS

## Behavioral and Social Sciences

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-0101	It's a Small School After All	JulieWalker	Father Andrew White

## Biochemistry

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-0201	The Power of Acid	Steven Brent	Concordia Lutheran
J-0202	Isoprophyl Alcohol in Stain Removers	Jasmine Daniels	Kettering
J-0203	"Egg"cellent	Christiona Hawkins	Thurgood Marshall
J-0204	Yeast Beast	Jacklyn Thompson	Spring Ridge

## Botany

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-0301	Hydroponic vs. Soil Grown Plants	Michael Carrigan	Hyattsville
J-0302	Transpiration Time	Carl Coburn	Martin L. King
J-0303	Miracle Grow or Acid Plant Food?	Arthur Gulla	St. Columba
J-0304	Types of Soil	Sabrina Henderson	Buck Lodge
J-0305	Berry! Berry! Good!	Keith Hinton	Robert Goddard French
J-0306	Does Tobacco Affect Plants?	Angelique Jones	Jericho Christian
J-0307	Which Fruit Creates the Best Dye	Nichole Rosado	Buck Lodge
J-0308	Sweet Sweet Peas	Rakeyta Scales	Gwynn Park
J-0309	Plants Choose!?	Samantha Schohn	Father Andrew White
J-0310	Effects of Pain Relievers on Celery	John Sherman	St. Mary's of Piscataway
J-0311	To Grow or Not to Grow	Sabrina Watson	James Madison

## Chemistry

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-0401	Does Temperature Affect the pH of a Liquid?	Samantha Ahwah	St. Ignatius
J-0402	Soapy Surfactants	Evan Allen	St. Philip the Apostle
J-0403	Acid Bone	Erwin Aquilar	Buck Lodge
J-0404	The Lava of the Lamp	TJ Birmingham	St. Mary's of Piscataway
J-0405	Would You Like Salt with That?	Mallery Clites	Windy Hill
J-0406	Plant Pigment	Maria Concepcion	G. Gardner Shugart
J-0407	Which Freezes the Fastest?	Christina Davis	Gwynn Park
J-0408	Water Filtration	Kristian Dixon	St. Philip the Apostle
J-0409	Sour vs Power	Ashton Engdahl	Esperanz
J-0410	Browning Apples	Shelby Franklin	John Hanson French
J-0411	Evaporation Experimentation	Joseph Hanlon	St. Jerome's
J-0412	Nuts About Energy	Jenna Hogie	Martin L. King
J-0413	How Photographic Film works	Ashley Hollins	Thomas Johnson
J-0414	H2O Alteration Demo	Camessia Johnson	Issac Gourdine
J-0415	The Acid Effect	Matthew Kelliebrew	Thomas Johnson
J-0416	Flame Out	David Kirk	Martin L. King
J-0417	The Solvent that Solves It?	Briana May	Thurgood Marshall
J-0418	Heat of Chemical Reactions	Yaffet Menna	St. Columba
J-0419	Electrolysis	Thomas Riley	Kettering
J-0420	Medicine Mysteries	Stephanie Rodrigues	Thomas Johnson
J-0421	Hydrogen the Fuel of the Future	Gretchen Simms	Northern
J-0422	The Attack of Rust	Caitlin Virla	Robert Goddard French
J-0423	Triglycerides All Around Us	Tamika Washington	James Madison
J-0424	Acid Action	Matthew Williams	Greenbelt

## Computer Science

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-0501	Poker Geek	Mark Montgomery	Buck Lodge

## Earth Science

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-0601	Great Stars Above	Brandyn Phillips	St. Philip the Apostle

## Engineering

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-0602	Latitude/Shadow Length Relationship?	Angel Plane	Thomas Pullen
J-0701	Radio by Storm	Ryan Alexander	Ernest Just
J-0702	Wind, Power, and Blades	Arianna Arnold	Hyattsville
J-0703	The Sandbag Solution to Flooding	Nick Fosta	Martin L. King
J-0704	Watch Out! An Experiment w/ Catapults	Patrick Husson	St. Columba
J-0705	How Do Different Materials Affect Radio...	Brent Jackson	St. Philip the Apostle
J-0706	Basic Electoral Circuit	Jamal Jones	St. Ignatius
J-0707	Spagetti and Marshmallows	Joseph Marshall	Jericho Christian
J-0708	H2O Has Got the Power	Paul Menyweather	Thurgood Marshall
J-0709	Don't Break My Brick	Cameron Mitchell	John Hanson Montessori
J-0710	Flying Under the Radar	Ryan Moore	Mill Creek
J-0711	Fulcrum and Lever	Justin Porter	Stephen Decatur
J-0712	Winglets	Carola Purser	St. Philip the Apostle
J-0713	Mousey the Junkbot	Mark Ragland	Father Andrew White

## Environmental Sciences

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-0714	Shake 'n Quake...	Chawin Reilly	John Hanson Montessori
J-0801	The Greenhouse Effect: CO2 vs H2O	Gi-ann Acosta	Gwynn Park
J-0802	Raining Acid	Courtney Bartels	Leonardtwn
J-0803	2 Freeze or Not 2 Freeze	Virginia Boone	St. Philip the Apostle
J-0804	Oil Absorption Clay-Cotton-Sawdust	Alex Dewey	St. Mary's of Piscataway
J-0805	Changing a Plant's Diet	Mariah Edwards	Ernest Just
J-0806	Environmental Pollution - Oil Spills	Cody Hartsfield	Concordia Lutheran
J-0807	To Filter or Not to Filter	Melvin Johnson	John Hanson Montessori
J-0808	Trees Helping Water	Annalise Kenney	Plum Point
J-0809	Dirty Air Everywhere	Christinna Molley	Kettering
J-0810	Building Supplies and Acid Rain	Matthew Neal	St. Mary's of Piscataway
J-0811	Acid Rain's A Real Pain	Camila Pascual	Hyattsville
J-0812	Aquatic Macroinvertebrates	Sean Patterson	Martin L. King
J-0813	Who is Keeping Calvert Co. the Cleanest?	Siddarth Plakkot	Windy Hill
J-0814	Which Town has the Most Airborne....	Mia Spencer	Jericho Christian
J-0815	Germination of Oyster Mushrooms	Trinity Story	Concordia Lutheran
J-0816	Acid Rain and Germination	Niroshi Wijeweera	Greenbelt

## Mathematics

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-0817	Phosphorus and a Freshwater Plant	Caroline Wilson	Hyattsville

## Medicine and Health

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-0901	Can You Construct a 3-D Logarithm?	John Gregg	St. John's
J-1001	Oral Health	Jiannela apparolli	Buck Lodge
J-1002	The Digestive System	Brielle Catalan	John Hanson French
J-1003	Teeth Whitening: Whose Got the Edge?	Taisie Claiborne	Kettering
J-1004	Crest to the Test	Katy Gradle	Mill Creek

## Microbiology

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-1005	Fresh and Clean	Kiara Sizemore	Kettering
J-1101	Testing Tap Water in PGC, PWC and D.C.	Lisa Spears	James Madison

## Physics

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-1102	The Time Table of Food and Mold	Dexter Ware	Ernest Just
J-1201	Rockets In the Sky	Brad Bazzarre	St. Mary's of Piscataway
J-1202	Sliding Friction and Lubricants	Miguel Bluda	St. Pius X
J-1203	Give Me Pressure and Watch Me Roll!	Matthew Braun	Robert Goddard French
J-1204	How Temperature Affects a Basketball	Kyle Dameron	St. Philip the Apostle
J-1205	Caution! Liquids May Still Be Hot	Ashley-Renee Gaines	Thurgood Marshall
J-1206	Soda Pop	Chanda Hairston	Ernest Just
J-1207	Light By Friction	Breanna Jackson	Issac Gourdine
J-1208	3...2...1...Blast Off	Rachel Jagdeo	Buck Lodge
J-1209	Pitch Pipelooza	Lucien Jarrett	St. Jerome's
J-1210	1, 2, 3 Slide	Syeda Kaukab	Hyattsville
J-1211	Get a Grip on Friction	Jessica Marbourg	Hyattsville
J-1212	Bouncing Balls (Hot or Cold)?	Scott McLeod	Thomas Pullen
J-1213	The Color of Water	Justin McPherson	Concordia Lutheran
J-1214	Solar Collectors	Eltes Moumena	Greenbelt
J-1215	Heating Things Up	Sydney Pledger	Kettering
J-1216	Less Density = Less Buoyancy	Adam Rhodes	Hyattsville
J-1217	Insulation: Hit Stuff!	Emily Romani	Martin L. King
J-1218	What a Shocking Snack	Christopher Spriggs	Ernest Just
J-1219	Point Shoe Problem	Mary Steward	St. Jerome's
J-1220	Flames of Fire	Brooke Thomas	Issac Gourdine
J-1221	Ready, Set, Charge!	Joshua Wallingsford	Gwynn Park
J-1222	When the Glass Gets Rough...	Jiayi Wang	Hyattsville
J-1223	Bumper Height and Safety	Daniel Webster	Martin L. King
J-1224	The Effect of the Length of String...	Karen Yarborough	Kettering

## Space Science

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-1301	Crater Creators	Marney Erichsen	Leonardtwn

## Zoology

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
J-1401	Crickets and Colors	Kyle Clothier	Leonardtwn
J-1402	Ants and Food	Omari Lewis	Ernest Just
J-1403	At What Water Level Oysters Thrive	Camilla Rodgers	Little Flower

# SENIOR DIVISION EXHIBITORS

## Behavioral and Social Sciences

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-0101	The Effect of a Strobe on Performance	Benjamin Garmoe	Bowie

## Biochemistry

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-0102	To Yawn or Not to Yawn	Brian Gregory	Eleanor Roosevelt
S-0103	Color and Cognitive Development	Jodi Heizer	Eleanor Roosevelt
S-0104	The Gender - Identity in Memory	Constance Iloh	Oxon Hill
S-0105	Fingerprint Analysis	LaJoy Johnson	Forestville

## Botany

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-0106	A Colorful Memory	Lindsey Poramo	Bowie
S-0107	Can You See What I Hear?	Katelyn Salonish	Eleanor Roosevelt
S-0108	Circadian Rhythms	Justin Daniel	Jericho Christian
S-0160	Smells That Excite You	Stacy Angu	Bowie
S-0160	Smells That Excite You	Kimberly Fauux	Bowie
S-0201	Pineapple Jell-O to Gel or Not to Gel	Ogechi Achulco	Gwynn Park
S-0202	ASAP1 & It's Role in Bending Membranes	Diana Amariel	Eleanor Roosevelt
S-0203	K.I.S.S.- Keep It Simple Sugar	Michelle Chase	Forestville
S-0204	To Eat or Not to Eat	Shannon Cummings	Leonardtwn
S-0205	Extracellular pH and Murine Cytokines	Julianne Cyr	Eleanor Roosevelt
S-0206	Green Hair and Tan	Evan Feldman	Leonardtwn

## Chemistry

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-0207	Variable Vegetables	Ryan Hurley	Bowie
S-0208	Food Preservation	Zackary McCombs	Surrattsville
S-0209	Genetics of Honey Bee Immune...	Joseph Msefya	Eleanor Roosevelt
S-0210	Making Biodiesel	Elaine Mui	Oxon Hill
S-0211	Fruit & Vegetable Dehydration	Brandon Solano	Gwynn Park
S-0212	Temperature and Enzymes	Iris Urbina	Forestville
S-0301	Bean Me Up Scottie	Colleen Bauk	Leonardtwn
S-0302	Toxic	Joshua Brooks	Gwynn Park
S-0303	It's in the Water	Teresa Crenshaw	Friendly
S-0304	Soil pH, Seed Germination, and Plant Growth	Theresa Daus	Bishop McNamara
S-0305	Up or Down	Kalil Deschemps	Surrattsville
S-0306	Effect Circuit Paths Affect Efficiency	Nicholas Diaduk	Great Mills
S-0307	Are Your Plants Healthy?	Tonecia Hargrove	Oxon Hill
S-0308	Power Plants	Travis Jackson	Fairmont Heights
S-0309	Antioxidants of Blackberries	Aselle Lyles	Eleanor Roosevelt
S-0310	Plant PMS	Kristina Madula	Oxon Hill
S-0311	The Effect of Electrical Systems in Soil	My Ngoc Nguyen	Parkdale
S-0312	Grass: Better Growth Under Artificial...	Amy Scheffler	Leonardtwn
S-0313	Sugar and Spice	Takessiah Scott	Gwynn Park
S-0314	pH Level and Plants	Tiffini Smith	Oxon Hill
S-0315	Mapping of a Raspberry Population	Nathaniel Snyder	Eleanor Roosevelt
S-0316	Allelochemicals and Plants	Terry Wallace	Gwynn Park
S-0360	Preserving Roses	Ememobong Etuk	Suitland
S-0360	Preserving Roses	Ebony Lomax	Suitland

## Computer Science

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-0361	Vege Time	Tomilayo Komolafe	DuVal

## Earth Science

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-0361	Vege Time	Ambili Ndumbi	DuVal

## Engineering

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-0401	The Splitting of the Smartie	Justin Barlow	Forestville
S-0402	Diesel Fuel from Vegetable Oil	Nick Brono	Leonardtown
S-0403	There She Blows	Ashley Freeman	Oxon Hill
S-0404	Colorful Chemical Clock	Emily Gehrels	Eleanor Roosevelt
S-0405	Faraday's Law	Diane Mattingly	Leonardtown
S-0406	Actions of Leavening Agents	Anna-Lisa Minto	Suitland
S-0407	Got Wood?	Kelley Oklesson	Eleanor Roosevelt
S-0408	Ripening too Fast? Relax! Use Wax	Hannah Patrick	Bowie
S-0409	Can Gases in the Air Dissolve in Water?	Anthony Rufus	Gwynn Park
S-0410	Metal Corrosion	John Scott	Surrattsville
S-0411	Pop-Pop, Fiz Sizzle - Sizzle and Fizzle	Jasmine Smith	Forestville
S-0412	What's it All About . . . Algae?	Katie Staso	Leonardtown
S-0413	Splitting Water	Justin Stewart	Oxon Hill
S-0414	The Study of the Environment on Metals	Tiricka Triplet	Oxon Hill

## Environmental Sciences

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-0415	What's In Your Water	Michael Wilder	Fairmont Heights
S-0416	Finding the Molar Mass ...	Kenneth Williams	Fairmont Heights
S-0501	Wireless Network Security	Eric Lamison-White	Bowie
S-0502	Eroding Mountain Dimensions	Wesley Miller	Eleanor Roosevelt
S-0503	A Mathematical Expression Compiler	Ramzi Mukhar	Eleanor Roosevelt
S-0504	How to Fight An Idiot Error	Ganesh Persaud	Bowie
S-0505	Multi-Agent AI for Tetrahedral Rover	Charles Sebens	Eleanor Roosevelt
S-0601	The Amazing Greenhouse Effect	Steven Murray	Bowie
S-0602	How Pure Is Your Drinking Water?	Jennifer Smith	Eleanor Roosevelt
S-0603	Solar Cell and Color of Light	David Tasky	Eleanor Roosevelt
S-0604	How Would the Climate of the Earth ...	David Woodson	Bishop McNamara
S-0701	Steel Hardness and Shear Strength	Erin Deery	Eleanor Roosevelt
S-0702	Do They Really Care If It Says Fragile?	Nichola Dobson	Eleanor Roosevelt
S-0703	Power of Glue	Ashlee Floyd	Oxon Hill
S-0704	Solid Like A Block	Brain Gordon	Oxon Hill
S-0705	What is the Effect of Sand Proportion ...	Kelsey McConkey	Bishop McNamara
S-0706	Viscous Hover Craft Joint	Wayne Mitchell	Suitland

## Mathematics

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-0707	Robotics	James Neely	Oxon Hill

## Medicine and Health

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-0708	Basking in the Limelight	Agnes Szerenyi	Oxon Hill
S-0709	Wings: The Tools of Flight	Daniel Thrift	Bowie
S-0710	The Search for the Perfect Nose Cone	Stephen Won	Great Mills
S-0711	A Lifting Experience	Neal Zabiegalski	Leonardtown
S-0760	A Hole in the Bottle	McKeyther Smith	Fairmont Heights

## Microbiology

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-0760	A Hole in the Bottle	Joel Tyson	Fairmont Heights
S-0801	Air Pollution and Home Heating	Paul Alexander, III	Jericho Christian

## Physics

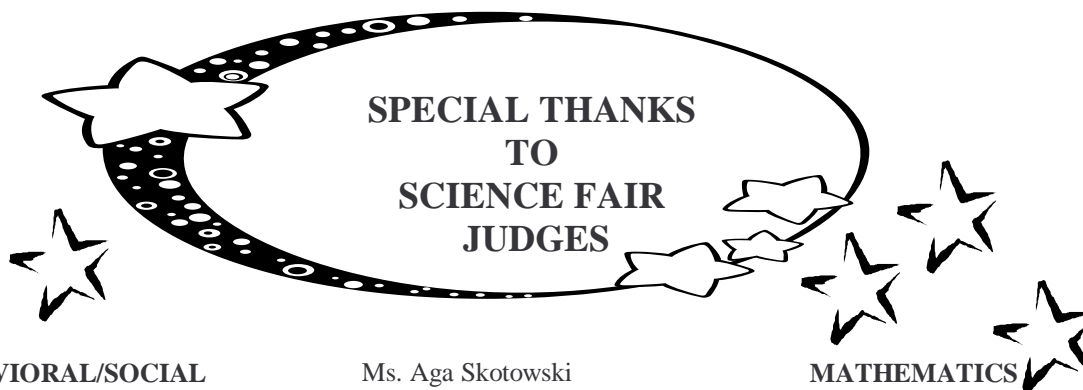
<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-0802	Anacostia's Fecal Contamination	Carolyn Badders	Eleanor Roosevelt
S-0803	Use of Clay to Prevent Alga...	Emily Brownlee	Calvert
S-0804	How Poluted Is It?	Kenya Crawford	Suitland
S-0805	The Water in Between	Hollie McBride	Charles Flowers
S-0806	Pollution Kills: True Story of Bay Grasses	Mary Muldoon	St. Mary's Ryken
S-0807	Which Anti-Freeze is Least Hazardous...	Anuj Patel	Leonardtwn
S-0808	The Influence of Bradyrhizobium Bacteria ...	Victor Richeson	Friendly
S-0809	How Many Will Come?	Taj Rollins	Charles Flowers
S-0810	Solving Soil Erosion and Water Drainage	Katie Turner	Leonardtwn
S-0811	Water, Water Everywhere, But Not a Drop...	Theresa Walker	Oxon Hill
S-0812	The Cup	Jaya Davis	From the Heart
S-0813	The Ionizer	Jessica Jones	From the Heart
S-0814	To Drink or Not to Drink: What's in Your Water?	Haywood Perry, III	Oxon Hill
S-0815	Environmental Effect on Greenhouses Gases	Vanessa Rivera	Eleanor Roosevelt
S-0860	What is the Effect of Pesticides on Pipes?	Christine Adams	Bishop McNamara
S-0860	What is the Effect of Pesticides on Pipes?	Jessica Collins	Bishop McNamara
S-0861	Do Fuel or Fire Consumer Products Emit...	Christine Anderson	Jericho Christian
S-0861	Do Fuel or Fire Consumer Products Emit...	Bobby Henry	Jericho Christian
S-0862	The Crib-Bed	Julia Grandison	From the Heart
S-0862	The Crib-Bed	James Jackson	From the Heart
S-0901	What Determines Average SAT Scores?	Ajay Chandhok	Eleanor Roosevelt
S-0902	The Transmission of a Chaotically-Encrypted...	Anthony DeGennaro	Bishop McNamara
S-0903	Estimating Pi: Buffon vs. Monte Carlo	Andrew Felter	Eleanor Roosevelt
S-0904	Statistically Spelling	Hanna Froe	Oxon Hill
S-0905	What's the Message?	Emily Wharton	Bowie

## Space Science

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-1001	Does Space Reversal Help with Reading...	Lindsey Barrett	Leonardtwn

## Zoology

<u>Project#</u>	<u>Project Title</u>	<u>Exhibitor</u>	<u>School</u>
S-1002	Abnormal vs. Normal: What's In Your Blood	Brittany Bibb	Oxon Hill
S-1003	Colgate vs. Rembrndt	Emily Brutout	Bowie
S-1004	Bones, Bones, Bones!	Deborah Camara	Fairmont Heights

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Dr. Kim Waddell



# Criteria for Judging

## Procedures

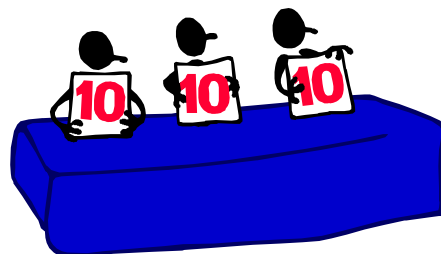
- Appropriate Topic (5)* The extent to which judgment is used to select a topic that is researchable, manageable, and of interest to the scientific community.
- Planning (10)* The planning and organization of the work, including preliminary investigations. Includes actual development of the project and shows evidence of consistent and continuous effort.

## Project Development

- Scientific Thought (25)* Information and data gathered (including adequate records), analysis of information and data, demonstration of understanding of scientific method, and interpretation of data.
- Creative Ability (25)* Originality of approach, ingenious uses of materials, and purposefulness. (Collections are considered creative only if they serve a scientific purpose).
- Conclusions (10)* The extent to which valid conclusions are simply and clearly stated and are fully supported by the collected data.

## Presentation

- Exhibit (2)* The extent to which the exhibit displays the investigative results in an organized, attractive, and complete display.
- Oral Presentation (5)* The extent to which the student can orally explain the project, answer questions, and demonstrate thorough understanding of the projects.





## Science Fair Awards

*To facilitate judging, the fair is divided into a Junior Division (middle school grades 6, 7 and 8) and a Senior Division (high school grades 9, 10, 11 and 12). Within each of these divisions, 14 subject areas have been established. With the exception of the Team Category, each project competes against others in its own subject area. Teams compete across all subjects. Scientists, engineers, mathematicians, or architects who are experts in the particular subject area evaluate each project. Information about the awards to be presented at the fair is given below.*

### **Congress Awards**

A First Place Award may be given in each subject area in both Junior and Senior Divisions. Second and Third Place and Honorable Mention Certificates may be presented to all other student exhibitors whose exhibits rate in the upper 50% of the entrants. All other exhibitors who set up their projects, maintain them properly during the fair, and remove them on time, will receive certificates of participation at the conclusion of the fair.

### **Grand Awards**

First and Second Grand Awards will be given in both Junior and Senior Divisions. In the Senior Division, the First and Second Place Grand Award winners will have an opportunity to attend the Intel International Science and Engineering Fair to be held in Cleveland, Ohio.

### **Grover C. Sherlin, Jr. Award**

This award is given in tribute to one of the fair's original organizers and first president of the Prince Georges Science Fair Association, the late Mr. Grover C. Sherlin, Jr. A plaque will be awarded to the top two students in grades 9 through 11 in the senior division who are not one of the Grand Award Finalists.

### **Howard B. Owens Award**

These awards in honor of the late Dr. Howard B. Owens, founder and, for 23 years Director of the Prince George's Area Science Fair, will be presented for the best all-around exhibit in each division, with special emphasis on how the visual presentation communicates science.

### **Hajime Ota Award**

This award is in honor of the late Hajime Ota who was associated with this Science Fair for over 25 years. This award consists of a plaque and cash and is presented for the outstanding project in Engineering in the Senior Division.

### **Robert L. Wistort "Best Presentation" Awards**

Robert L. Wistort was one of the Washington area's finest science teachers. This award is given to the student in each subject area in each division who does the best job of explaining the exhibit to visitors at the fair. Best Presentation judging takes place Saturday evening when the fair is open to the public.

### **Special Awards**

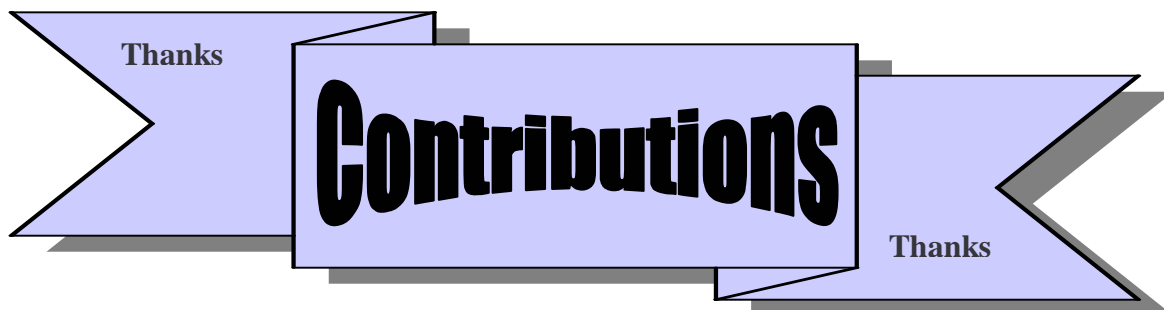
Independent scientific societies, industry, and government departments give Special Awards. These awards may consist of certificates, books, trips, magazine subscriptions and cash. A list of the sponsors for the special awards is provided on page 19.

## Past Senior Division Grand Award Winners and Schools Attended

1949	Marshall Peters, Hyattsville	1973	Fallon Maylack, Bowie	1995	Joseph Lucas, Oxon Hill
1950	Frances Ann White, Hyattsville		Stanley A. Cousins, Crossland		Sajjad Matin, McDonough
	Mary Helen Martin, Hyattsville	1974	Ellen Kessler, Parkdale	1996	Lala Qadir, LaPlata
	Dominic B. Edelen, Frederick Sasscer		Paul Goodsaid, Oxon Hill		Yette K. Wood, Oxon Hill
1951	Mary Helen Martin, Hyattsville	1975	Cecily Skoog, Bowie	1997	Lala Qadir, LaPlata
	Jean Elizabeth Spencer, Hyattsville		Steven cousins, Crossland		Cameron Horn, Eleanor Roosevelt
	Donald P. Shankweiler, Hyattsville	1976	Joseph Andeson, Bowie	1998	Margot Gianetti, Eleanor Roosevelt
1952	Fred Schindler, Northwestern		Frank Shih, Jr., Bowie		Diane Kang, Eleanor Roosevelt
1953	Don R. Boyle, Northwestern	1977	David A. Fuchs, Eleanor Roosevelt	1999	Rachel Williams, Patuxent High School
1954	Robert Ambrose, Northwestern		Jeanne L. Sears, Friendly		Michael Smit, Eleanor Roosevelt
1955	Bette Marie Coder, Northwestern	1978	Steven A. Lloyd, Eleanor Roosevelt	2000	Brett Darcey, Great Mills
1956	Robert H. Gaither, Northwestern		Michael Briggs, High Point		Kelly Loyer, LaPlata
	Lynne Welch Taylor, Northwestern	1979	Steven A. Lloyd, Eleanor Roosevelt	2001	Elisabeth Stratton, Eleanor Roosevelt
1957	Lynne Welch Taylor, Northwestern		Charles Andraka, Eleanor Roosevelt		Christina Dwyer, Eleanor Roosevelt
	Warren E. Prince, Northwestern	1980	Steven A. Lloyd, Eleanor Roosevelt	2002	Nicole Carbonaro, Great Mills
1958	George V. Waldo, Jr. Bladensburg		Charles Andraka, Eleanor Roosevelt		Mary Brazelton, Bishop McNamara
	Richard E. Griffith, Jr., Northwestern	1981	Paul E. Young, Eleanor Roosevelt	2003	Sarah Bates, Eleanor Roosevelt
1959	Ernest A. Braund, Bladensburg		John F. Lunny, Jr., McDonough		Lyen Acosta, Oxon Hill
	John .W. Wood, Bladensburg	1982	Jonathan Santos, Bowie	2004	Sara Brownlee, Calvert
1960	Margaret Kottke, Bladensburg		Marvin Erdley, Lackey		Anthony DeGennaro, Bishop McNamara
	William A. Burslem, Jr. Northwestern	1983	Jonathan Santos, Bowie		
1961	Stewart R. Wood, Bladensburg		Arvind Sinha, Eleanor Roosevelt	<b>Team Finalist</b>	
	William A. Burslem, Jr. Northwestern	1984	Atul Patel, Bowie	1995	Christine Higdon, West Lake
1962	Linnea Stewart, High Point		Carol Lynn Thomas, Thomas Stone		Nicholas Hileman, West Lake
	George V. Kenney, II, Oxon Hill	1985	Carol Lynn Thomas, Thomas Stone	1996	Olivia Campbell, Northern
1963	Joseph E. Maskasky, DuVal		John Barnett, Eleanor Roosevelt		Mihele Martin, Northern
	Tessa Orellana, Northwestern	1986	Ernest G. Brown, Eleanor Roosevelt	1997	Jaon Garman, Eleanor Roosevelt
1964	David L. Abel, Northwestern		Arvind Krishnamurthy, E. Roosevelt		Branden Hall, Eleanor Roosevelt
	David R. Jefferson, High Point	1987	Shibani Pati, Eleanor Roosevelt		Brian Robak, Eleanor Roosevelt
1965	Susan D. Delaney, Bladensburg		George Thomas, Eleanor Roosevelt	1998	Jeffrey Abshire, Eleanor Roosevelt
	David R. Jefferson, High Point	1988	Sylvia Sid, Oxon Hill		Jonathan Nagy, Eleanor Roosevelt
1966	James E. Harper, III, Oxon Hill		Jean Wang, Eleanor Roosevelt	1999	Lauren Barrett, Eleanor Roosevelt
	David R. Jefferson, high Point	1989	Sharon Buckland, Oxon Hill		Sarah Secules, Eleanor Roosevelt
1967	Thomas H. McGovern, Northwestern		Jean Wang, Eleanor Roosevelt	2000	Catherine Dozier, Gwynn Park
	John C. Whitehouse, Oxon Hill	1990	Paul M. Rice, Eleanor Roosevelt		Katrina Robinson, Gwynn Park
1968	William J. Dichtel, Jr., High Point		Gabriel D. Cahalan, Central		Melynda Sriver, Gwynn Park
	Robert D. Rappleye, II, Northwestern	1991	Ken S. Wang, Eleanor Roosevelt	2001	Jonathan Curtis, Bowie
1969	Glenn W. Hanes, DuVal		Mark Pilloff, Oxon Hill		William Martin, Bowie
	Michael B. Ellerin, High Point	1992	Ken S. Wang, Eleanor Roosevelt	2002	Christina Weaver, Oxon Hill
1970	Bruce C. Marusich, Surrattsville		Peter P. Zapalo, III, Oxon Hill		Jaquay Powell, Oxon Hill
	Frederick B. Temple, Jr., Potomac	1993	Ken S. Wang, Eleanor Roosevelt	2003	Jeffrey Dronenburg II, Great Mills
1971	Linda Coffman, Northwestern		Vladimir Mandic, Oxon Hill		Matthew Martz, Great Mills
1972	Rickey D. Chapman, Parkdale	1994	Sherry Ashby, Eleanor Roosevelt	2004	Eletha Flores, Charles Flowers
	David R. Williams, Friendly		Hammad S. Matin, McDonough		Justin Racadio, Charles Flowers

# A Listing of Special Awards Sponsors Invited to the Prince George's Science Fair

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American Nuclear Society  
American Society of Civil Engineers  
American Society of Engineers of Indian Origin  
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AARP Andrus Foundation  
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Association for Women in Science  
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Citizens Concerned for a Cleaner County Club 24  
Commissioned Officers Association of the U.S. Public Health Service  
Conservation International  
Discover Young Scientist Challenge.  
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Federal Water Quality Association  
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Institute of Environmental Science and Technology  
Institute of Food Technologists  
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National Association of Biology Teachers  
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National Space Club  
Northrop Grumman Mission System  
Optical Society of America  
Organization of Chinese Americans  
Patent and Trademark Office Society  
Prince George's Audubon Society  
Sigma XI (SX) (USFDA)  
Society for Applied Spectroscopy  
Society for Imaging Science & Technology  
Society for In Vitro Biology  
Society of Manufacturing Engineers  
Society for Mining Metallurgy & Exploration  
Society of Women Engineers  
Society of Wood Science & Technology  
Southern Maryland Audubon Society  
Student Exposition of Energy Resources  
United States Air Force  
United States Army  
United States Congressional Award  
United States Department of Energy  
United States Department of Health & Human Services  
United States Environmental Protection Agency  
United States Metric Association  
United States Navy  
University of Maryland Engineering Alumni  
Washington Chemical Society  
Washington society of Engineers  
Washington Statistical Society  
Water Environment Federation  
Water and Waste Operators Association  
Wild Life Society  
Yale Science & Engineering Association



## Scholarships

This year Prince George's Community College and the University of Maryland (College Park and Baltimore Campuses) will contribute scholarships to 12<sup>th</sup> grade winners in the senior division.

## International Science and Engineering Fair Trip

The First and Second Grand Award Winners in the Senior Division, and the top Team may have an opportunity travel to the Intel International Science and Engineering Fair held in Cleveland, Ohio. The Intel International Science and Engineering Fair will take place from May 8-14, 2005.

## Special Thanks

Substantial support to the Prince George's Area Science Fair has also been made by: **Prince George's County Public Schools, Prince George's Community College, Prince George's Science Fair Association, Calvert County Public Schools and St. Mary's County Science Fair Board.**

We would like to give special thanks to **Mr. Ernest Brown and his staff** from Prince George's County Public Schools for all the special work they do in providing material support for the Science Fair. Also, thanks to the Prince George's County Public Schools Office of Printing Services for their continued support in the printing of this Science Fair Booklet.

To all the **teachers and administrators** involved in conducting local school fairs, a debt of gratitude is owed. Thank you.

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