

California State Science Fair

Sponsored by
the Advisory Board
of the California
Museum of Science
and Industry
Foundation



WELCOME TO THE CALIFORNIA STATE SCIENCE FAIR

It is my great pleasure to welcome you on behalf of the Advisory Board of the California Museum of Science and Industry to the 1986 California State Science Fair. This event brings together some of the finest young talent in science, mathematics, and engineering in the State of California. We are pleased and proud to sponsor this annual event.

This year there are over 300 projects on display representing counties in the State of California. All the exhibits in the fair are winners. They are the best projects from science fair competitions held throughout the state. Earlier this year, these young exhibitors have demonstrated initiative and creativity in keeping with the highest traditions of science. Their accomplishments reflect many months of hard work and dedication by them, their teachers and their parents.

We offer our congratulations to the students participating in the fair, to their teachers and, their parents.

We encourage visitors to tour the exhibits that are on display in the California Museum of Science and Industry.

John J. Moehr, Chairman
Advisory Board
California Museum of Science and Industry

CALIFORNIA STATE SCIENCE FAIR

PURPOSES

1. To provide additional motivation for able students to actively apply their knowledge and critical thinking skills through creative problem solving projects in mathematics, science and engineering.
2. To give students and teachers an opportunity to become more widely acquainted with other students, teachers, scientists and engineers who share similar interests in the various fields of science.
3. To give public recognition to talented young people for their achievements and to encourage them to enter careers related to science or engineering.
4. To afford parents and the community an opportunity to examine the products of scientific investigation and the communications skills of students in grades 7 through 12.
5. To create public awareness of scientific potential of future leaders who will have responsibility for national security and progress.
6. To provide another opportunity by which the schools and community can work together for constructive youth development.

STANDARDS FOR JUDGING SCIENCE PROJECTS ESTABLISHED BY THE INTERNATIONAL SCIENCE AND ENGINEERING FAIR

1. CREATIVENESS

Originality of the problem, uniqueness of approach and the handling and interpretation of data should be commensurate with the grade level of the students. Ingenious use of equipment and materials is considered regardless of the expense of the items involved.

2. SCIENTIFIC THOUGHT AND ENGINEERING GOALS

Scientific Thought: The project shows evidence of depth of study and effort in employing scientific procedures in the solution of a clearly defined problem including study of background, organized procedures, appropriate sampling, orderly recording and analysis of data and the formulation of logical conclusions;

or

Engineering Goals: The project has a clear objective relevant to the needs of the potential user. The product or process has been tested and is workable and feasible economically and ecologically.

3. THOROUGHNESS

The study is complete within the scope of the problem. Scientific literature has been searched, experiments have been repeated and careful records have been kept.

4. SKILL

Credit is given for special skills needed for the construction or use of equipment and for mathematical, computational, observational and design skills.

5. CLARITY

The purpose, procedures and conclusions are clearly explained orally and through the display. The project notebook is well organized, neat and accurate. Sources of ideas, data and assistance are clearly identified.

1986 CALIFORNIA STATE SCIENCE FAIR
AWARDS CEREMONY

May 22, 1986

CALIFORNIA MUSEUM OF SCIENCE AND INDUSTRY

5:30 p.m. RECEPTION
Sandra Burton
Manager of Education Services

6:30 Pledge of Allegiance
John J. Moohr, Chairman
Museum Foundation Advisory Board

Welcome
Eugene Harrison, Ph.D.
Administrator, Science Programs

Introduction of Guests
Sol Rubenstein, Coordinator
California State Science Fair

Acknowledgement of Contributors, Judges,
and Fair Committee

7:00 PRESENTATION OF AWARDS
Honorable Mentions, Third, Second and First Places
Special Awards
Sweepstakes Awards

8:30 PUBLIC VIEWING OF STUDENT PROJECTS
Sol Rubenstein

4

SPECIAL RECOGNITION AND THANKS

The California State Science Fair Planning Committee wishes to thank the groups who have contributed time, talent, materials and financial support to this year's fair:

CATEGORY AWARDS

Advisory Board, California Museum of Science and Industry
Atlantic Richfield Company
California Mathematics Council, Southern Section
California Museum of Science and Industry Docents
Chemical Waste Management Incorporated
Diagnostics Products Corporation
Hewlett Packard
Honeywell Incorporated, Training and Control Systems Operations
Institute of Food Technologists, Southern Section
Lockheed
Los Angeles Dodgers
National Engineering Honor Society-Tau Beta Pi-Southern Calif. Alumnus Association
Southern California Psychiatric Society
Unocal Corporation, Community Affairs

SPECIAL AWARDS

American Association of Physics Teachers, Southern California Section
American Citation Society
American Chemical Society, San Diego Section
American Institute of Aeronautics and Astronautics, Orange County Section
Association for Women Geoscientists
California Sea Grant College Program-University of California, Irvine
Geology Teachers of America, Western Section
Los Angeles Dental Society
Mercury Seven Foundation
Schlosser Forge Company
Society of Women Engineers, Los Angeles County Section
Society of Women Engineers, Orange County Section
Southern California Association of Marine Invertebrate Taxonomists

5

CONTRIBUTIONS AND SPECIAL SUPPORT

Advisory Board, California Museum Foundation
 Carnation Company
 Coca Cola Bottling Company of Los Angeles
 Docents of California Museum of Science and Industry
 Los Angeles County Office of Education
 Los Angeles Unified School District
 Museum of Science and Industry Council (MOSAIC)
 University of Southern California
 Rockwell International Corporation
 and
 Staff of the California Museum of Science and Industry
 Education Division
 Exhibits Department
 Foundation Offices
 IBM Computer Facility
 Plant Operations
 Administrative Offices

JUNIOR DIVISION
 BEHAVIORAL AND SOCIAL SCIENCES

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
1 Brouer	8	Determining the Effects of Dermal Application of Alcohol, Stress Variables and Vitamins on the Coordination Level and Learning Ability of Mice	Fresno	C. Gong
2 Collins	8	Physiological and Psychological Development of Twins	Ventura	M. Cohen
3 Dallape	8	Can Stress Be Reduced By Subliminal Persuasion?	Riverside	P. Day
4 Dexter	7	The Condition of the Cerebellum in Various Ages	Ventura	D. Hoffman
5 Estepa	8	Anthropod Behavior: Testing the Territoriality of the Achela Domesticus	Ventura	D. Sogioka
6 Gee	7	The Seed Preference of Birds	San Bernardino	M. Huelka
7 Hegde	7	Why Do Disfluencies Increase In Oral Reading?	Fresno	R. Hurado
8 Hua	8	Does A Second English Language Exist in Our School?	L.A.	M. Anderson
9 Kelleher	7	Emotional and Mental Behavior of Siblings According to the Number of Siblings in a Family System	Ventura	M. Cohen
10 Lear	8	Does The Level of Noise Affect Eye-Hand Coordination?	Riverside	M. Day
11 Lever	8	Concentration	Marin	S. Migliaccio
12 Liu	8	Can Mice Distinguish Between Red and White?	Riverside	D. Khoo
13 Lucas	8	Coping With Fears and Phobias Through Psychotherapy	Ventura	M. Cohen
14 O'Keefe	8	Who Stops?	Marin	S. Migliaccio
15 Rockwell	7	Do Math Scores and Times Improve While Listening to Music?	San Diego	B. Stribley
16 Shearer	8	A Comparison of Two Methods of Simple Associative Conditioning	San Diego	L. Sovinsky

17	Trapp	Jeffrey	8	Experimental Psychology - Do Rats Learn Faster Than Mice?	Los Angeles	B. Blankley
18	Williams	Evan	7	Do Shiny, Beeping, Electric or Wind-up Watches Attract Sharks?	Marin	S. Migliaccio
19	Williams	Roger	8	Investigating The Effects of Aromatic Odors, Sound Levels and Colors on The Activity Level of Mice	Fresno	C. Gong
20	Wilson	Jennine	8	How the Hummingbird Chooses Flower Colors	Los Angeles	M. Burrill
21	Wood	Jeffrey	7	Measuring Stimulus Complexity in Novels: The Computer as Literary Sleuth	San Diego	M. Teachworth

JUNIOR DIVISION
BIOCHEMISTRY

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR		
32	Allizadeh	Kaveh	8	What Are The Differences Between Butter and Margarine?	Marin	S. Migliaccio
33	Barber	Mary Catherine	8	How Does Exercise Affect The Blood Sugars in a Diabetic?	Ventura	J. Night
34	Craddock	Holly	7	Do Different Species of Plants Contain the Same Pigment?	Riverside	M. Richardson
35	Kato	Kiya	8	What is the Effect of Aspartame on the Lifespan of <i>Prosoiphilia Melanogaster</i> ?	Los Angeles	M. Simonds
36	Olnick	Rayme	7	Chemical Reactions While Baking	Ventura	M. Del Nagro
37	Pierce	Renee	8	Comparative Protein Content Analysis Between Hydroponic and Terrestrial Plants	San Diego	M. Borden
38	Reyes	Jennifer	8	Hemolytic Effects of Osmosis and Diffusion Upon Erythrocytes	Ventura	M. Sogioka
39	Rolio	Lesley	8	How Is the Level of Ascorbic Acid Affected When Taken Out of Its Natural State?	Los Angeles	M. Tatum
40	Schell	Bonnie	8	Tears: Emotional vs. Simulated	Los Angeles	M. Burrill
41	Shih	William	8	Fungal Degradation Upon Polymeric Dye	San Diego	R. Borden
42	Shultz	Susanne	7	The Chromatographic Separation of <i>Drosophila Melanogaster</i> Eye Color Pteridines	Ventura	D. Sogioka
43	Stofer	Kira	8	Does Color Affect Depth Perception?	San Diego	M. Badgett

2

8

44	Wardlow	Luz	8	The Inhibition of Gland Development in the <i>Oncopeltus fasciatus</i> by Using the Anti-Hormone - Prebocene	Ventura	B. Susman
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JUNIOR DIVISION
BOTANY

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR		
58	Alias	Eric	7	Study of Plant Life	Ventura	D. Esel
59	Bellomy	Mark	8	How Do Soil Conditions Affect The Photosynthetic Process in Plants?	San Bernardino	M. Van Derveer
60	Budge	Philip	7	What Are The Effects of Various Artificial Hormones on Different Plants?	Fresno	M. Hurado
61	Byrd	Angela	8	The Effects of Various Temperatures and Water Types on the Transpiration Rate of <i>Phaseolus Limensis</i>	Ventura	M. Susman
62	Chen	Hank	7	How Does Temperature Affect the Growth of Plants?	Ventura	D. Leatart
63	Cruse	Jason	8	Soil and Light: How Do They Affect Tomato Plants?	Marin	S. Migliaccio
64	Czernek	Christlne	8	The Comparison of Capillary Action Irrigation With Drip and Sprinkler Irrigation	Ventura	M. Cohen
65	Larson	Misti	8	Nutrition With a Strawberry Plant's Anatomy	Ventura	M. Cohen
66	Lewis	Susan	7	A Comparison of Bush and Vine: <i>Lathyrus Odoratus</i>	Ventura	B. Susman
67	Liu	Trudy	7	Does Color Affect Plants And How?	Los Angeles	D. Finn
68	Loo	Janet	8	The Effect of Different Concentrations NaCl on the Growth of Mung Beans	Los Angeles	K. Soule
69	Potter	Rebecca	8	The Effect of Electromagnetism on the Germination of Mung Beans	San Diego	M. Teachworth
70	Regier	Jason	7	The Effects of Acid Rain on Radish Seedlings	San Diego	L. Decker
71	Sugawara	Tony	8	Effects of H2O2 on Germination and Growth of Plants	Los Angeles	D. Finkelstien
72	van den Akker	Jon	7	Acid Rain	San Diego	M. Martyn

3

9

73 Wallin Chris 8 Factors Which Govern The Growth of Agrobacterium Tumefaciens Fresno C. Gong

JUNIOR DIVISION CHEMISTRY

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
85 Akmal Shiraz	7	Investigating The Pesticide Residue Levels of Fresh Fruits	Fresno	R. Hurado
86 Brett Anthony	8	Chemiluminescence	Los Angeles	N. Bernstein
87 Chang Grace	8	The Amount of Calcium Vary in Different Samples of Water	Los Angeles	K. Soule
88 Coleman Heather	7	Is The Rate of Dissolving Affected by Particle Size?	Riverside	M. Williams
89 Favreau Gabrielle	8	How Do Different Fabric-Care Treatments Affect the Flammability of Cloth?	Riverside	M. Richardson
90 Larsen Monika	8	Does The Amount of Suds That Form Relate to the Effectiveness of a Detergent?	Los Angeles	M. Thornton
91 Mecagni Anna	7	Heat Treatment of Organic Matter to Increase Methane Gas Emissions	Ventura	M. Sogioka
92 Patience Kevin	8	A Computer-Aided Study of The Factors Affecting Crystallization Time	Ventura	S. Nardi
93 Santana Lulu	8	Toxicity of Citrus Peel Liquids And... A Step Beyond	Ventura	B. Susman
94 Trombetta Vincent	7	Hydrocarbons and Fuel Production	Ventura	M. Cohen
96 Wells Lara	8	Does Centripetal Force Affect the Growth of Potassium Alum Crystals?	San Diego	R. Borden

JUNIOR DIVISION COMPUTER SCIENCES

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
108 Bergman Douglas	8	The Turning Log Machine	Los Angeles	M. Anderson
109 Dillingham Alan	8	Halley's Comet...Can A Computer Help You Find It?	Ventura	M. Nardi

4

110 Garcia Stephen	7	Advantages of Word Processing	Ventura	R. Ranum
111 Kim John	8	The Wind Tunnels	Los Angeles	R. Kumano
112 Leslie William	8	A Computer Simulation	San Diego	K. Cannon
113 Mealey Chad	8	Hacker Protection	San Diego	M. Hirschkoff
114 Miller Bruce	8	Can A computer Make Learning Math Fun?	Ventura	M. Susman
115 O'Brien Mitchell	8	The Effect of Computers on Students Learning Spelling	Santa Barbara	C. Libbert

JUNIOR DIVISION EARTH/SPACE SCIENCES

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
126 Akronowitz Joshua	7	The Affects of Temperature on Light	Ventura	M. Cohen
127 Cooper Michael	7	Seismic Recording Device	Ventura	R. Ranum
128 Cushman Clint	8	And The Walls Came Tumbling Down	San Diego	L. Sovinsky
129 Fiala Mark	7	Does Vacuum Affect Space Exploration?	Ventura	S. Tamoto
130 Harker Allen	7	Movement of Beach Sand	San Diego	L. Hilke
131 Magde Michael	7	The Capillary Action of Different Kinds Soils	San Diego	M. Decker
132 Samuels Bobby	7	The Effect Gravity Has Upon The Growth Reproduction Rate of Plants	Ventura	M. Cohen
133 Starnes William	7	Crystals and How They Grow	Ventura	M. Essel
134 Vogel Greg	8	Iridescent Clouds	Ventura	S. Nardi
134 Walters Tessa	7	The Effects of Acid Rain on Limestone	Los Angeles	M. Fitch
135 Wibow Monica	7	At What Rate Does Heat Absorption and Loss Occur in Soil?	Los Angeles	M. Burton

JUNIOR DIVISION ENGINEERING

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
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BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
144 Brahma	8	Artificial Freezing	Fresno	R. Hurado
145 Brown	8	Nosecones Make A Difference	San Diego	C. Reinicke
146 Christina	7	Wave Generator	Humbolt	D. Kraemer
147 Delano	8	The Effectiveness of Different Insulations, Color of Dwelling, and Structural Change on the Rate of Absorption of heat	Fresno	M. Gong
148 Desai	8	Reverse Osmosis, Its Effectiveness for Household	Santa Barbara	M. Winters
149 Dunford	8	Is There A Difference Between An Antique And A Reconstructed Tesla Coil?	Riverside	D. Talley
150 Freeman	8	Earthquakes and Building Designs	Ventura	M. Cohen
151 James	7	What Affects The Brightness of A Light Bulb	Marin	S. Migliaccio
152 Kwon	8	Steel, Iron, Aluminum, Copper: Which One Expands Most When Heated	Los Angeles	M. Bartel
153 Mattes	7	Wave Energy Conversion	Los Angeles	H. Treend
154 Miners	8	Which Synthetic Fabric is the Coolest?	Los Angeles	H. Rumball-Petre
155 Ottoson	8	Does The Frontal Area of a Vehicle Affect Air Pressure?	Riverside	M. Cardy
156 Pratt	8	What Type of Wooden Bridge Truss Supports The Most Weight?	San Diego	L. Clark
157 Price	8	What Role Does Air Play in Making An Airplane Fly?	San Bernadino	M. Vanderveer
158 Stroller	8	D.C. Electric Motor Driving An Archimedes Electric Screw	Los Angeles	M. Kumano
159 Stumpf	7	Determining the Effects of Different Variables on Inhibiting Penetration of Microwave Radiation	Fresno	C. Gong
160 Zykowski	7	Model Rockets: Which Configuration Goes the Highest?	San Diego	M. Rosenthal

JUNIOR DIVISION
ENVIRONMENTAL SCIENCES

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
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6

12

171 Bruner	7	Investigating the Effects of Various Soils and Pollutants in Reducing the Dissolved Oxygen in Water	Fresno	C. Gong
172 Cheng	8	How Does Selenium Affect Algae?	Fresno	J. Roderick
173 Cisneros	8	Investigating the Effects of Increased Water Volume and Turbidity Levels on the Penetration Level of Microwave Radiation on Living Organisms	Fresno	C. Gong
174 Colovos	8	Is Our Water Dangerous to Our Health?	Ventura	M. Nardi
175 Deicas	7	Waste is Useful	San Diego	P. Hanig
176 Derecho	8	Cleaning Up the Mess: The Practicality of Oil Sorbents	Los Angeles	N. Bernstein
177 Gaylord	8	Investigating the Detrimental Effects of Pesticide, Fertilizer, Alkaline Solutions in Decreasing Beneficial Soil Decomposers	Fresno	C. Gong
178 Moser	8	Is There A Shapely Way to Collect Calories?	San Bernadino	R. Hall
179 Noyes	8	The Effects of Various Materials and Substances in Inhibiting and Promoting the Irradiation Level of X-Ray Radiation on Planarial Regeneration	Fresno	C. Gong
180 Page	8	Biomass Fuels	Kern	B. Lovan
181 Quan	7	Effect of San Diego River Water on Mission Bay	San Diego	M. Ghironi
182 Recinos	7	Determining The Harmful Effect of Various Detergents, Disinfectants, and Chlorin on Soil Microorganisms	Fresno	C. Gong
183 Reid	8	The Effects of Air Pollution on Solar Energy Collection and Its Implications in an Industrial Society	San Bernadino	L. Reid
184 Rothman	8	The Dangers of Acid Rain	Ventura	M. Cohen
185 Schlotfeld	7	The Effect of Acidic Precipitation on the Growth and Development of Raphanus Sativus	Ventura	B. Susman
186 Takenga	7	Does a Spotted Surge Weed Produce a Toxin?	Riverside	M. Powell
187 Tamura	8	Investigating the Effects of Various Soils and Water Turbidity in Governing the Diffusion Rate of Malathiohn	Fresno	C. Gong
188 Wall	8	Can The Muck Be Treated With Lime?	Los Angeles	D. Geralt

7

13

JUNIOR DIVISION
MATHEMATICS

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
203 Bly	8	Who is Average in St. Mark's 7th and 8th Grades	Marin	S. Migliaccio
204 Dobyms	8	Dustfall	Marin	S. Migliaccio
205 Hannigan	7	How Common is the Perfect Histogram	Marin	S. Migliaccio
206 Heron	8	Can You Trust the Odds	Los Angeles	R. Howard
207 McEachern	8	Which Slot? A Pascal's Pin Board	Marin	S. Migliaccio

JUNIOR DIVISION
MEDICINE/HEALTH

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
212 Beard	8	Directional Hearing	Ventura	M. Cohen
213 Bingham	8	Investigating the Effects of Various Sugars, Alcohols and Their Combinations on The Physiological Changes of Daphnia	Fresno	C. Gong
214 Collins	8	Weak Consumable Acids and Tooth Enamel	Fresno	R. Hurado
215 Davidson	7	Analyzing the Coronary Arteries	Santa Barbara	M. Mahony
216 Folger	8	Does Exercise Decrease Heart Rate	Riverside	Bowers
217 Freeman	8	Investigating the Effects of Various Concentrations of Medications, Vitamins and Alcohol on the Embryological Development of Frog Embryos	Fresno	C. Gong
218 Gomez	8	The Induction of Morphological Changes in the Development of Rana Papiens by Isotox	Ventura	Susman
219 Kane	7	Which Sunscreen is Most Effective at Absorbing Ultraviolet Rays	Ventura	T. Middleton
220 Kinsey	8	Who Has a Steadier Hand - An Adult or an Adolescent	Riverside	Day
221 Kruger	8	Can Dependency to Steroids Be Induced in Mice	Los Angeles	Eyestone

8

14

222 Martyn	7	The Effects of Age on Olfactory Sensation	Ventura	D. Hoffman
223 Olson	7	The Effects of Caffeine	Ventura	Susman
224 Sahara	8	What is the Best Protection for Your Skin from the Sun's Ultraviolet Rays	Los Angeles	W. Cragoe
225 Simantuu	8	Eyes' Response to Intense Light; Possible Role of Iris Color	San Diego	B. Hirshoff
226 Springer	8	The Effects of Motion, Shape and Color on Peripheral Vision	San Diego	J. Ederer

JUNIOR DIVISION
MICROBIOLOGY

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
240 Addleson	8	Testing Different Sunscreens' Absorption of Ultra-Violet C Light Using E. Coli	San Diego	L. Sovinsky
241 Albiston	7	Volume of Water Filtered by Vorticella	San Bernardino	M. Havelkad
242 Ballard	8	How Clean Are Your Forks	Marin	Migliaccio
243 Barr	7	Investigating the Antibiotic Properties of Various Tooth-pastes	Fresno	C. Gong
244 Crump	8	Investigating the Antibiotic Properties of Various Types and Amounts of Aromatic Vapors	Fresno	C. Gong
245 Dedicatoria	8	Lysozyme: A Study of Antibacterial Activity	Ventura	Susman
246 Jensen	8	Underwater Farming	San Diego	R. Borden
247 D'Attile	8	Factors Affecting Fish Respiration	Ventura	Knight
248 Luna	8	How Do Vitamins and Some Conditions Affect Euglena	Del Norte	T. Brown
249 Lurie	7	The Effect of Freezing on Lactobacillus Bulgaricus	San Diego	P. Hanig
250 MacDonald	8	E. Coli in the Waves	San Diego	R. Borden

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
251 Merk	8	Determining the Spoilage Rate of Various Types of Baby Food Products Exposed at Room Temperature	Fresno	C. Gong
252 Nishimoto	7	Investigating Antibiotic Properties of Various Plants	Fresno	C. Gong
253 Ross	8	What's Living In Your Mouth? A Cow's? A Horse's? A Dog's?	San Bernardino	Wood
254 Ryder	8	Jumping Genes	Los Angeles	R. Bartel
255 Sun	7	Can Euglena "See" Color	Los Angeles	Burrill
256 Toon	8	Do Household Disinfectants Kill E. Coli and Staph. Aureus	Fresno	C. Gong
257 Wang	8	Investigating the Effectiveness of Various Seed Solutions and Extracts in Inhibiting Microgenism Growth	Fresno	C. Gong

JUNIOR DIVISION
PHYSICS

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
267 Carney	8	Electromagnetism	Los Angeles	Kumano
268 Dea	8	Design and Construction of an Analytical Spectroscope	Los Angeles	J. McHale
269 Dilligan	8	Design and Conditions for Ion Motors	San Diego	R. Borden
270 Garcia	8	Detection of Sound Waves by Using Cork Dust and a Hot Nichrome Wire	San Diego	L. Sovinsky
271 Johnson	8	The Revolving Wing and the Magnus Effect	Ventura	M. Cohen
272 Kean	8	What Happens When the Length of a Pendulum is Increased	San Bernardino	Cullen
273 Lundahl	7	Aerodynamics in Automotive Design	Ventura	M. Cohen
274 McGary	7	Thermal Transfer: How Spectral Frequencies Influence the Efficiency of Convection, Radiation and Conduction	Ventura	M. Cohen
275 Miyao	8	Characteristics of Infrared and Visible Light Using Optica Fiber	Ventura	Susman

10

16

276 Oh	8	The Coanda Effect: Phenomenon of the Century	Ventura	Nardi
277 Riegert	8	The Effects of Mixing Gasses on Ion Yield	Santa Barbara	D. Winters
278 Shannon	7	Electricity and Energy Efficiency	Ventura	----
279 Sherborne	8	To Cast a Stone - A Study of Catapults	Los Angeles	R. Kumano
280 Stockwell	8	The Effects of a Liquid's Density on its Droplet Shape	San Diego	T. Wisehart
281 Swensrud	7	Which Nail Will Fail	San Diego	Ezell
282 Riley	7	The Effect of Delayed Auditory Feedback on Speech	San Diego	M. Martin

JUNIOR DIVISION
ZOOLOGY

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
293 Albin	7	Determining the Food Preference Level and Factor Which Govern the Growth Rate of Land Snails	Fresno	C. Gong
294 Avila	8	Comparisons Between Chick and Frog Embryos	Fresno	T. Atkins
295 Dryer	8	Are There Visible Differences In Developing Chicken and Duck Embryos	Ventura	D. Hoffman
296 Hsieh	7	How Do Chemicals Affect Planarian and Regeneration	Los Angeles	N. Green
297 Hui	8	How Well Can Mice See Color	Los Angeles	W. Cragoe
298 Hultgren	7	Color Discrimination in Goldfish	San Diego	Ezell
299 Inouye	8	Do Vibrations Stimulate P. Clarkii	San Diego	D. Fenner
300 Kozuki	7	Do Drugs Affect the Hearttrate of Earthworms	Fresno	J. Panzak
301 Ratzman	8	Investigating the Effects of Increased Cryogenic	Fresno	C. Gong
302 Sahara	7	Are There Natural Repellants Against Mosquitos	Los Angeles	R. Bartel
303 Smay	7	Ant Navigation	San Diego	M. Teachworth

304	Stoddard	Angela	7	Does Gender and Age Determine Head Size	Marin	S. Migliaccio
305	Uerling	Teresa	7	What Environment Do Red Ants Prefer Most	Riverside	S. Stange
306	West	Kiersten	8	Effect of Nutrient Concentrations on Bioluminescence	San Diego	J. Blyth

SENIOR DIVISION
BEHAVIORAL AND SOCIAL SCIENCE

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
23 Gerle	Dana	11 Extension of the Stroop Phenomenon to Words and Shapes	San Diego	J. Poirier
24 Ham	Jeff	9 The Effect of Regeneration upon Memory in Planaria	Riverside	M. Nordeen
25 Hattenbach	Heidi	9 Flamings: A Behavioral Study of the Flock of Chilean Flamings	Santa Barbara	M. Tunnickliffe
26 Mills	Holly	9 Math Ability and Musical Talent	San Diego	G. Giguere
27 Robinson	Joanne	12 Are There Similarities Between an Owner and His/Her Pet?	Riverside	S. Harris
28 Wastila	Michael	11 The Correlation Between Test Results and Methods of Instructions	San Diego	G. Arnall
29 Wei	Albert	10 The Use of Hedges to Reduce Confusion in Reading Comprehension	San Diego	N. Eckenroth T. Perrott
30 Wharton	Cara	11 A Psychogenetic Study of Monozygotic and Dizygotic Twins	Los Angeles	M. Snodgrass

SENIOR DIVISION
BIOCHEMISTRY

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
46 Bajic	Anthony	9 Protein Assay of Turbellarian Neoblastic Cells Through Polyacrylamide Gel	San Diego	R. Borden
47 Bernstein	Jonathan	12 Interactions of Toxic Elements	San Francisco	D. Briggs
48 Lackey	Brent	12 Caffeine: A Base-ic Concern	Fresno	M. Chapman

12

18

49 Kreutzer	Sheri	10 Moldon Bread Crop and How It Is Affected By Climates	Oxnard	M. Vandenberg
50 Li	Sheung	9 Radiation's Effect on Protein Structure and Levels of Planaria	San Diego	R. Cizek
51 Mohler	William	11 How Do Water-Soluble Vitamins Affect Erythricybe's and the Human Body	Riverside	Malicay/Pomeroy
52 O'Neill	Kevin	9 Effect of Radiation on Chlorophyll Content in Beta Chlensis	San Diego	R. Borden
53 Pollichik	Jessica	10 Plant Pigments and Their Wavelength Absorptions	Los Angeles	M. Kurth
54 Porter	Allison	12 Two Dimensional Chromatography of Amino Acids	Los Angeles	E. Miller
55 Slivkova	Marianne	9 Phospholipid and Protein Contents in Various Organs of Snails	San Diego	M. Frantz
56 Stiffler	Jason	9 A Comparative Analysis of the Effects of Temperature and pH on Salivary Amylase in Rats and Humans	Los Angeles	D. Bourque

SENIOR DIVISION
BOTANY

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
75 Baxter	Airica	10 Aquaculture: A Method of Producing Food for the Future	Riverside	M. Peyton
76 Bradley	Julie	9 How Do Various Nitrate Compounds Affect Soybean Germination?	San Diego	C. Hill
77 Rowland	Chang	11 Does Light Affect the Frequency of Mitoses in the Meristemic Root Tissue Of Allium Cepa?	Los Angeles	R. Philp
78 Jones	Robert	10 Demonstration of an Inducible DNA Repair System	Los Angeles	M. Snodgrass
79 Jundanian	Kristine	10 Can Artificially Applied Cytokinins and Absisic Acid Hormones Affect Transpiration of a Plant	Riverside	M. Newton
80 Lewis	Renee	10 Pre-Germination Treatment of Rye Grass With Low Voltage Electrical Fields	San Diego	E. Romero
81 Luong	Chi	12 Effect of Depth on Height of Plants	Santa Barbara	J. Loda
82 Smith	Melanie	10 Developing a Useful Product from Onion Skins	Los Angeles	T. Watson

13

19

83 Troise David 12 Effects of GAZ and IAA on the Zygoctactus' San Diego M. Rodecker
CAM System

SENIOR DIVISION
CHEMISTRY

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
97 Bartunek Robin	12	Characteristic Shrinkage of Cotton	Riverside	M. Harris
98 Brekse, 3rd Andrew	11	The Effect of Distance from the Source on the Nitrate Concentration in Water Flowing from Hieks Canyon Wash	Orange	M. Fier
98 Courtois Todd	9	Electricity and Pure Water From Organic Refuse Using Fuel Cells	San Diego	D. Schmidtk
99 Ferguson William	11	Atomic Weights from Crystals	San Diego	M. Nordell
100 Hamamoto David	12	Determining Densities of Small, Irregular Objects	Los Angeles	D. Nichols
101 McDonald Chad	11	How Does Concentration Affect the Diffusion of Strong Electrolytes	Los Angeles	E. Miller
102 Lawson John	12	Selenium Absorption Equilibrio	Fresno	T. Thomas
103 Rahman Maie	10	Prediction of Absolute Zero	Los Angeles	R. Kuppermann
104 Watson Marguerite	11	Garbage Power	Ventura	K. Kearsley
105 Westervelt Robert	10	Which of These Adhesives Has the Best Strength Versatility	Riverside	S. Harris
106 Whitchurch Leon	9	Which Antacid is Most Effective	San Bernardino	M. Rohac

SENIOR DIVISION
COMPUTER SCIENCE

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
117 Calabrese David	11	TEXTLINK: The Printed Word to Computer via Structural Character Recognition	San Diego	M. Oden
118 Chiu Charles	9	What Effects do Environmental Factors Have on A Computer-Simulated Lake	Los Angeles	C.R. Braker
119 Cottrell Lance	11	Project Trap-Door: A Text Encryption System	San Diego	J. Baron

14

20

120 Daniels Tyler	11	A New Algorithm for Speech Recognition	Fresno	M. Thomas
121 Kiamilev Emir	9	A Car Advisor	San Diego	M. Teachworth
122 Raymond Mary	11	An Automated Punnett Square	Los Angeles	M. Collism
123 Rosen Seth	12	By Jove, I've Built a Computer! ^{Computer!}	San Diego	G. Volger
124 Ton Quyen	11	Quicker Than Quicksort Sort	San Francisco	D. Briggs

SENIOR DIVISION
EARTH/SPACE SCIENCES

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
137 Iritz Michael	9	The Shaking Earth, The Burning Sky: Solar/Earthquake Correlation Tests	San Diego	R. Borden
138 Kloninger John	9	Whose Fault Is It?	Fresno	M. Atkins
139 Kopikis Alexis	9	Design Your Own Space Colony	San Diego	P. Hanig
140 LeeMaster Timothy	11	Computing the Distance from the Sun to an Asteroid	San Diego	J. Baron
141 Patience Jennifer	10	Halley's Comet 1986: A Determination of It's Orbital Elements	Ventura	K. Chartier
142 Torres Chon	9	How to Find the Speed of Light by Using Jovian Satellites	Los Angeles	T. Watson

SENIOR DIVISION
ENGINEERING

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
162 Devine Ryan	9	Aerodynamics: Air In Motion	Ventura	K. Kearsley
163 Glezer Jacob	9	Generation of Electricity from Wave Energy	San Diego	G. Keefer
164 Hatten Michael	9	Making a Printed Circuit Board	Ventura	M. Kearsely
165 Mar Kelvin	11	A Saltwater-Driven Magneto-hydrodynamic Power Generator	Los Angeles	D. Nichols
166 Rogers Erik	10	Adding Depth to a Matrix	San Diego	M. Brown

15

21

167	Ryder	Scott	10	Engineering	Fresno	P. Robinson
168	Sokoisky	Eileen	11	The Geological Influences on Magnetite Content of the Beach Sand	Los Angeles	L. Walker
169	Swan	Christopher	9	How is a Winged Keel Superior to a Conventional Keel?	San Diego	G. Keefer
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180	Cardenas	Michelle	12	The Toxicity of Sewage on Marine Life	Los Angeles	B. Gonzales
191	Eoff	David	12	Can Trace Gases Intensify the Greenhouse Effect?	Fresno	J. Chapman
192	Hutcheson	Heather	9	How Do Wind Generators Affect Small Mammal Population	Palm Springs	L. Fuentes
193	Magde	Laura	10	Variation in Concentration of Catt in Tap Water Correlated With Weather Patterns	San Diego	B. Cizek
194	Maltz	Gregory	12	Effect of Petroleum in the Intertidal	San Diego	H. Maltz
195	McGlockin	Shree	11	Does Corona's Recycled Sewage Water Contribute the Most T.D.S. (salts) to Orange County's Water System	Riverside	Newton/Engle
196	Melendez	Martha	11	The Effects of Acid Rain and the Resulting Mineral Deficiencies on Alaskan Peas	Los Angeles	L. Larsen
197	Radford	Mike	10	Can Ozone Damage to Plants Be Minimized With Vitamin Application?	Riverside	C. Cessna
198	Trump	Steen	12	A Study on Seasonal Settlement of Intertidal Invertebrates	Humboldt	D. Nichols
199	Van	Alex	11	A Comparative of Toxicity of Fresh and Salt Water Fish	Los Angeles	D. Nichols
200	Wallin	Mark	10	Factors That Govern the Viability and Ice Nucleation of Pseudomonas Syringae	Fresno	C. Gong
201	Yuen	Michael	11	Project Mercury	San Francisco	D. Briggs

16

SENIOR DIVISION
MATHEMATICS

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR		
209	Ho	Hung	12	Computerized Numerical Integration of Riemann Integrals With the Newton-Cotes Family	San Diego	M. Oyler
210	Kubota	Navoyuki	9	Successive Differences in Polynomials	San Francisco	D. Briggs
228	Christian	Mark	10	Induction of Sperm Abnormalities in Mice by Thiolepa	Los Angeles	H. Christian
229	Goldfarb	Jamie	11	Flow Cytometry in Body Fluids	San Diego	M. Baron
230	Hunt	Amy	11	Is Your Vitamin's Solubility Affected by It's Coating	San Bernardino	M. Piercy
231	Huynh	Hung	12	The Effect of EGF upon Human Tumor Cell Growth in Tissue Culture	San Diego	R. Finley
232	Keasey	Amber	9	The Effect of Ginseng, Bee Pollen, and Sugar on Rats' Endurance	Riverside	M. Krull
233	Koepsell	Amy	11	Does Alcohol Affect the Devopment of Medaka Fish Eggs?	Riverside	R. Piercy
234	Ohashi	Kevin	10	Investigating the Factors Which Govern the Rate of Diffusion of Various Drugs, and Their Combinations	Fresno	C. Gong
235	Ray	Kristi	10	The Effect of Acidified Ethanol in Rats' Duodenum	Los Angeles	R. Snodgrass
236	Ringland	Missy		Which Method of Cooking Is Better for Retaining Vitamin C in Foods	Riverside	M. Peyton
237	Ross	Vonda	11	The Effects of Ultrasound on Sister Chromatid Exchange in Vivo	Los Angeles	R. Snodgrass
238	Urguby	Janel	9	RBC Surface Antigens	San Diego	K. Wertz
SENIOR DIVISION MICROBIOLOGY						
BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR		

17

259	Barrie	John	12	Acclimation of Wine Yeast - How and Why	Fresno	T. Thomas
260	Chou	Jessica	10	Microdose Paradox: A Biological Investigation of Agitated Serial Microdilutions	San Diego	R. Cizek
261	Hozberg	Hillary	12	What Best Deters the Growth of Strep Bacteria	Los Angeles	M. Stahl
262	Krumhelz	Gady	9	Phathogenecity Patterns of Tinea Capitis Causing Fungi	San Diego	K. Wertz
263	Santana	Lilia	9	Immune System: We Can Aid in Its Struggle Against Disease	Ventura	D. Sogioka
264	Wertlieb	Jessica	11	What Are the Curing Effect of UV Light the F ⁺ Plasmid of Escherichia Coli	San Diego	G. Oden
265	Yee	Roger	12	The Design, Construction, and Testing of a New Plasmid Vector Useful for the in Vitro Transcription of RNAs	Los Angeles	D. Nichols

SENIOR DIVISION
PHYSICS

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR		
284	Agcongay	Joy	11	Bubble Geometry in Sodium Alginate Solutions	San Diego	R. Wachs
285	Dang	Simon	10	A Quantitative Study on Energy Applied to Surface Tension	San Diego	D. Maquet
286	Jung	Jackson	12	Life Time Extension of the R-Line Fluorescence in Ruby	Los Angeles	D. Nichols
287	Keyes	Jason	09	Just for Kicks!	San Diego	R. Halsey
288	Lago	Paul	09	Calculating the Buoyancy of Salt Water	Santa Barbara	J. Crawford
289	Nguyen	Huy	11	Finding the Gravitational Force	Los Angeles	M. Tomac
290	Odette	Kylee	09	"Which Material is the Best"	San Bernardino	R. Hall
291	Obernolte	Jay	10	"Impact Speed"	Fresno	P. Robinson

SENIOR DIVISION
ZOOLOGY

BOOTH NAME	GR.	PROJECT TITLE	COUNTY	ADVISOR
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308	Doolittle	Natashia	10	Which came First?	San Diego	C. Darwin
309	Greer	Kristen	09	Sound Related Behavior in Damselfish	San Diego	Rleth
310	Harnett	Cindy	09	How does Temperature Affect the Response of Female House Crickets to Male House and Field Crickets	Los Angeles	S. Tso
311	Ho	Bick	12	Determining the Location of a Fruit Fly Gene	Ventura	Tiefel
312	Keller	Joshua	09	The Effect of Acid Rain on Bivale Mollusks	San Diego	R. Menze
313	Lum	David	12	A Study on the Reproductive and Brooding Behavior of the Humphead	Los Angeles	G. Duane N
314	Maggert	Keith	10	Direct Calorimetr on Heat Production in Tarantulas	San Diego	Oden
315	Schumick	Charlaine	12	Do Goldfish Grow to fit their Bowls?	Riverside	S. Nordeen
316	Seaward	Samantha	10	Citrus Vs. Cricket	San Diego	S. Richardson
317	Sissan	Anne	12	Critical Periods for Imprinting in Ducks	Fresno	Thomas
318	Solomon	Monica	11	Prenatal Growth of the Rat	Los Angeles	C. Snodgrass