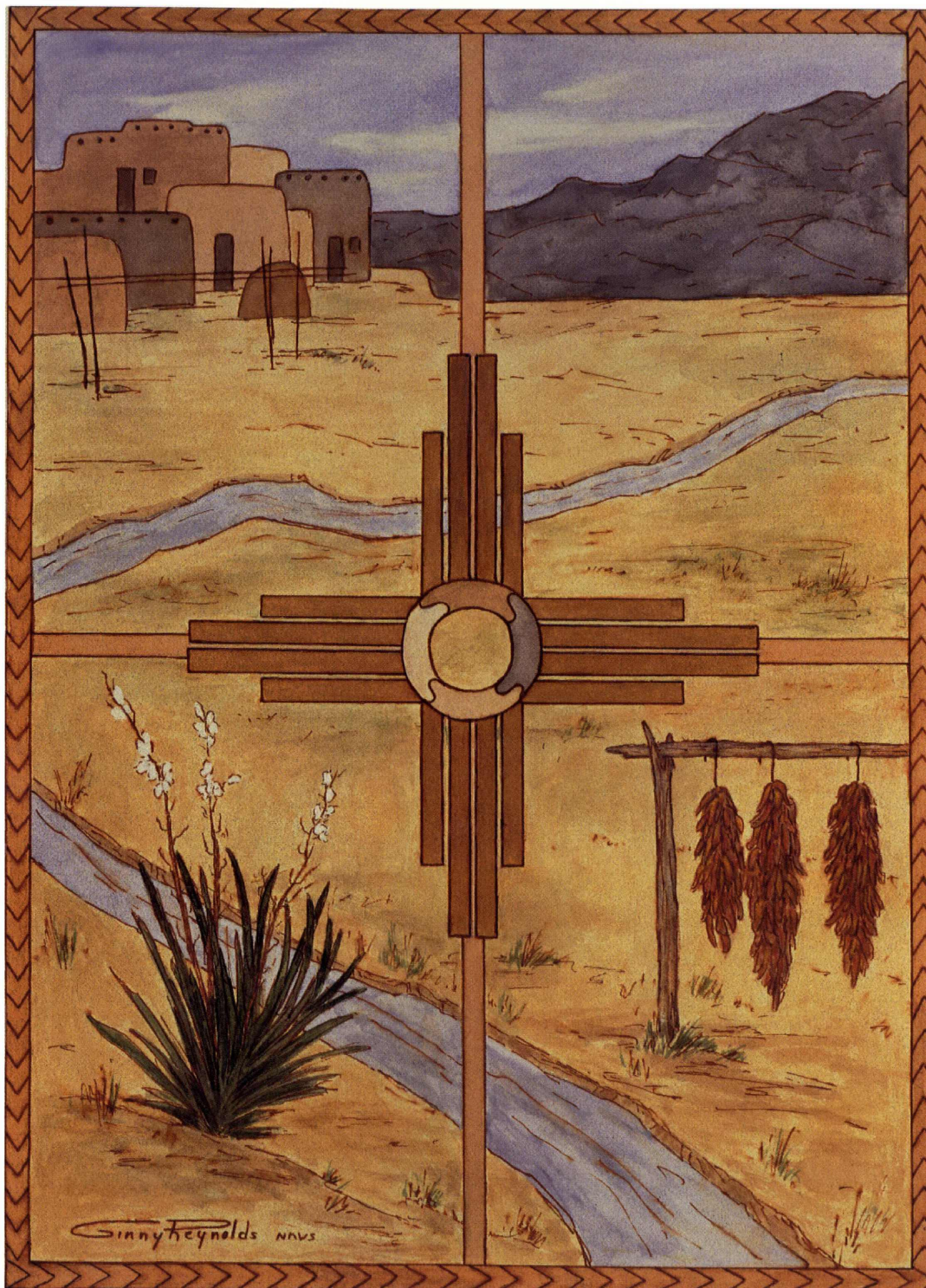


PROCEEDINGS  
5TH ANNUAL NATIONAL SCIENCE FOUNDATION  
ALLIANCES FOR MINORITY PARTICIPATION  
STUDENT RESEARCH CONFERENCE

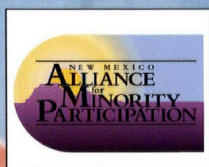


HOSTED BY  
NEW MEXICO ALLIANCE FOR MINORITY PARTICIPATION  
AT  
NEW MEXICO STATE UNIVERSITY  
JULY 24-27, 1997



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# **Fifth Annual National Science Foundation Alliances for Minority Participation Student Research Conference**

## **OVERVIEW**

The Alliances for Minority Participation (AMP) program is a multidisciplinary, comprehensive undergraduate program designed to substantially increase the quantity and quality of minority students receiving baccalaureate degrees in science, engineering, and mathematics (SEM) and, subsequently, to increase the number of minority students entering graduate school to attain the doctorate in SEM fields supported by the National Science Foundation (NSF). To utilize the knowledge, resources, and capabilities of a board of organizations within the SEM community, AMP encourages the formation of coalitions among leaders throughout academia, government, industry, and other organizations. The program is maximizing the potential for making a significant, positive impact on minority participation over the next decade. Success of the AMP program will be measured by the program's ability to bring about a significant increase in the number of under-represented minorities graduating with a baccalaureate degree in SEM fields supported by NSF.

AMP facilitates achievement of the long-term goal of increasing the production of minority doctoral students in SEM fields, especially those who choose to take faculty positions on college and university campuses. This goal is being accomplished through the formation of Alliances in partnership with NSF. Full participation by the SEM community is essential to the achievement of program goals.

## **GOALS**

*The goals of the conference are:*

- 1. to provide an opportunity for Alliance students to meet and share successes and solutions to problems faced by minority students in the pursuit of careers in science, engineering, and mathematics;*
- 2. to provide a forum to showcase AMP student research;*
- 3. to motivate AMP students to pursue Ph.D. degrees in science, engineering, and mathematics; and*
- 4. to expose AMP students to successful minority scientists, engineers, and leaders in the scientific community.*

***“The National Science Foundation provides a stimulus whereby educators and all who support education can contribute to the production of contemporary, agile, and competitive workers. The nation’s wealth, and thereby quality of life, is increasingly dependent upon effective and sustained progress in addressing our existent scientific and technical challenges. STAY THE COURSE, AND WELCOME TO THE EIGHTH DAY OF CREATION.”***

*Dr. Luther S. Williams  
Assistant Director  
Directorate for Education and Human Resources  
National Science Foundation*

## Comments from United States Senator Pete V. Domenici

I would like to take this opportunity to welcome you to the 5th Annual National Science Foundation Alliances for Minority Participation Research Conference. Es un gran honor dar les la bienvenida a Las Cruces, Nuevo Mejico, la Tierra del Encanto. It is a great honor to welcome you to the City of the Crosses in New Mexico, the Land of Enchantment. We hope your visit to the beautiful campus of New Mexico State University will be pleasant.

It would have meant a great deal to me to attend the Conference and personally speak to you, but the Senate schedule precludes my being with you. However, I did not want to miss this opportunity to share some thoughts with you.

The theme of your conference, "Futures Rising Through Research," is fitting because of the growing importance of the science, math, engineering, and technology disciplines of our increasingly complex world economy. As we proceed into the 21st Century, these diciplines will only take on a greater importance. By deciding to become involved with the science, math, engineering, and technology disciplines, you have positioned yourselves to play a vital role in our nation's future.

As you may know, I am a long time supporter and defender of programs that ensure minority and disadvantaged students have the opportunity to not only attend college, but obtain suitable employment upon graduation. For instance, over the years I have consistently fought for adequate funding for the TRIO program.

The TRIO program was created thirty years ago with the mission of providing low income, minority, disabled, and disadvantaged students with the opportunity for a college education that would probably not be available under ordinary circumstances. Over the years the TRIO programs have been expanded and improved to provide a wider range of services and to reach more students who require assistance. The TRIO family currently includes such programs as Upward Bound, Upward Bound Math/Science, Educational Opportunity Centers, and Student Support Services.

I believe a strong investment in programs like TRIO and the Alliance for Minority Participation reflect our national commitment to the recruitment and retention of a high number of minority and disadvantaged students. These programs have a proven track record of excellence, truly making them a worthwhile investment.

I would like to take this opportunity to commend you for the hard work and dedication that has brought you here today. All of you have gone above and beyond the normal classroom expectations by becoming so involved in school and with the planning of your futures. The fact that you are here today only demonstrates this very point. I also wanted to compliment the superb effort you have put into preparing your research projects for the conference, and I wish you much luck in the oral and poster presentations of your projects.

In closing, I want to thank you very much for inviting me, and I hope you find the 5th Annual National Science Foundation Alliances for Minority Participation Research Conference most informative. I would like to wish you much continued success in school, your career, and life, and I hope you have a pleasant and enjoyable stay in Las Cruces.

Pete V. Domenici  
United States Senator





***Futures Rising Through Research***  
***5th Annual NSF AMP Research Conference***  
***Agenda***

**Thursday, July 24, 1997**

- 7:00 - 8:30 Continental Breakfast - Corbett Center West Ballroom
- 8:30 - 9:45 Walking Tour, NMSU Campus
- 8:30 - 12:00 Institutional Coordinator Meeting (New Mexico AMP) - Corbett Ctr. Doña Ana Room
- 8:30 - 11:00 Student Workshop 1: Preparing for the Graduate Record Exam (GRE) - Phyllis Miller, Educational Testing Service - Corbett Center Senate Chambers
- 10:00 - 10:45 Student Workshop 2: Transfer Guide for 2-year Program Students - Angela Mora, Director, Admissions Office, NMSU - Corbett Center Room 315
- 11:00 - 12:00 Student Workshop 3: Planning Your College Career: Academic Achievement Plan - Terry Cook, Assoc. Director, Center for Learning Assistance, NMSU - Corbett Center Senate Chambers

## **Bienvenidos!**

## **Welcome!**



*Dr. Ricardo B. Jacquez, Director  
New Mexico AMP*

New Mexico AMP is pleased and excited to be host for the 5th Annual National Science Foundation Alliances for Minority Participation Research Conference.

New Mexico is the home of a thriving variety of aerospace research, computer, electronics, and defense industries, including Phillips Laboratory, White Sands Missile Range, and the NASA/White Sands Test Facility. Los Alamos National Laboratory and Sandia National Laboratories, also located here, are part of our AMP family along with all 27 of the two- and four-year community colleges and universities in the state. We want you to take advantage of the chance to network with students and faculty from other AMP programs, and most of all, enjoy the hospitality and warmth of New Mexico and Las Cruces. My staff and I hope your visit here is one you will long remember.



*Students meet and greet at Welcome Reception*



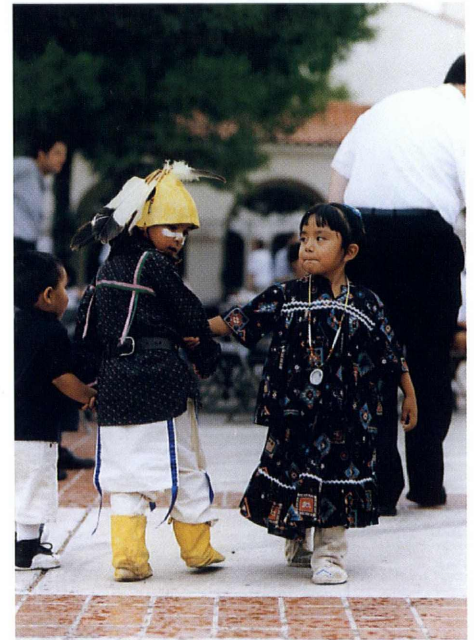
*Your conference hosts: The New Mexico AMP staff*



- 12:00 - 1:00 Lunch - Corbett Center West Ballroom
  - 1:15 - 2:00 Student Workshop 4: Funding Your Education, Sonia Honne, Western Alliance to Expand Student Opportunities (WAESO) - Corbett Center Senate Chambers
  - 1:00 - 4:00 New Mexico Institutional Coordinator Meeting Continues - Doña Ana Room
  - 2:00 - 4:00 Student Research Visit - Advanced Manufacturing Center - meet at Corbett Center south parking lot
  - 4:30 - 8:00 Conference Registration and Reception — *A Taste of New Mexico* - Southern Eagle Indian Club Dancers - Kent Hall
- Note: Conference artist Ginny Reynolds will sign posters from 5:30 - 6:30



## A Taste of New Mexico Dancing



### Friday, July 25, 1997

- 7:00 - 8:30 Continental Breakfast - Corbett Center East and Middle Ballrooms
- 8:00 - 4:00 Field Trip to Alamogordo/White Sands - meet at Corbett Center south parking lot
- 8:45 - 12:00 Project Director Meeting - Corbett Center Doña Ana Room
- 11:30 - 4:00 Day in the Park — food, games, DJ/NMSU Radio Station KRUX - Preciado Park
- 12:00 - 1:00 Project Director Lunch - Corbett Center East Ballroom
- 1:00 - 4:00 Project Director Meeting Continues - Corbett Center Doña Ana Room
- 4:00 Field Trip Buses Arrive at the Dormitory
- 5:30 - 6:30 Welcoming Ceremonies — Dr. Ricardo B. Jacquez, Director, New Mexico AMP; Dr. William Conroy, President, NMSU; Dr. William McHenry, Program Director, NSF - Corbett Center Ballrooms
- 6:30 - 7:30 Dinner - Corbett Center East and Middle Ballrooms
- 7:30 - 8:45 AMP Games and T-shirt Swap — MC: Terry Cook, Assoc. Director, Center for Learning Assistance, NMSU - Corbett Center Outdoor Stage

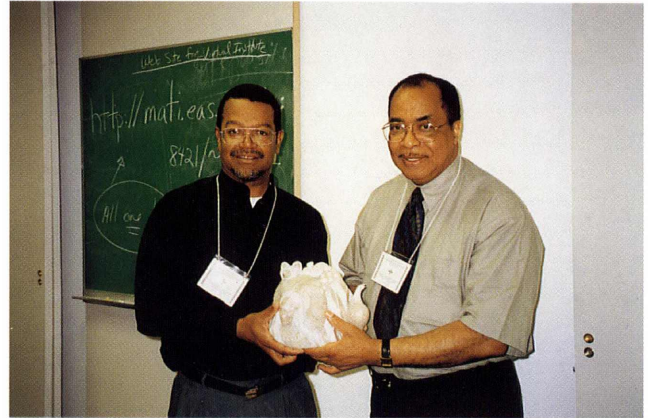


## Project Directors' Meeting

The July 25, 1997, Project Directors' Meeting at New Mexico State University was the last project directors' meeting conducted by Dr. William McHenry as AMP Program Director. He was to begin his tenure as Assistant Commissioner of Education for Academic Affairs for the Mississippi Institutions of Higher Learning on August 1, 1997. His last project directors' meeting was similar to his first except in participants. The similarities were full agenda, hard work, no break time, and Dr. Roosevelt Calbert. The difference was six AMP project directors in 1991 compared to twenty-six in 1997.



*Conference participants attend Dr. William McHenry's last Project Directors' Meeting*



*Spirit of America Stone presented to Dr. McHenry by Project Directors*

## Student Activities



*AMP Games*



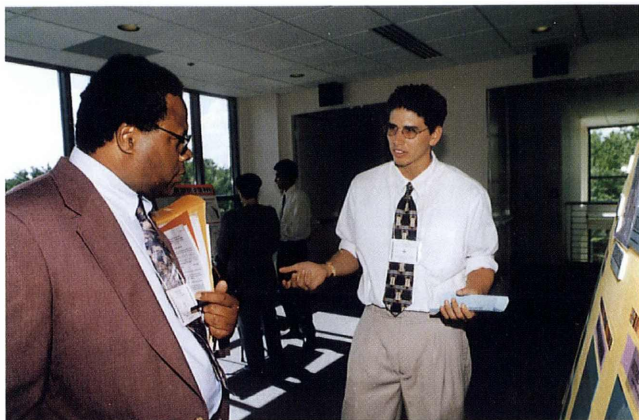
*T-Shirt Swap*

### Saturday, July 26, 1997

- 6:30 - 8:00 Poster Set-up - Corbett Center Halls
- 7:00 - 8:00 Continental Breakfast - Corbett Center East and Middle Ballrooms
- 8:00 - 9:30 Opening Remarks — Dr. Ricardo B. Jacquez
- Introductions — Dr. J. Derald Morgan, Dean, College of Engineering
- Keynote Speakers — Dr. Luther S. Williams, Asst. Dir., NSF; Dr. Richard Tapia, Hispanic Engineer of the Year; Adriana Ocampo, Jet Propulsion Laboratory
- Induction of selected guests into *Sociedad de Ingenieros*, NMSU College of Engineering Honor Society - Corbett Center Ballrooms
- 9:45 - 11:00 Session One — Concurrent Student Presentations - Corbett Center New Mexico Room, Doña Ana Room, Senate Chambers, Senate Gallery, Rooms 315, 317



## Poster Set-Up - Keynote Addresses



Students set up posters and respond to questions from Judges

### Keynote Speakers



**Dr. Luther S. Williams** is Assistant Director, Education and Human Resources, at the National Science Foundation. The Directorate includes programs related to women, minorities, persons with disabilities; pre-college mathematics, and science education efforts; informal education activities involving science and technology museums, television, and other media; and science, engineering, and mathematics undergraduate programs; among others. He serves as Vice Chair of the National Science and Technology Council's Committee on Education and Training and chairs its Subcommittee on Excellence in Science, Mathematics, and Engineering Education. He serves as a member of the Nominations Committee,

DANA Foundation Awards in Education, and the Genome Research Review Committee, the National Institutes of Health.

**Richard Tapia, Ph.D.**, is a mathematician and professor in the Department of Computational and Applied Mathematics at Rice University in Houston, Texas. He is internationally known for his research in the computational and mathematical sciences and is a national leader in outreach mathematics education and minority mathematics education. Dr. Tapia is the first in his family to attend college. He completed his Ph.D. degree in 1967. He was selected Hispanic Engineer of the Year by *Hispanic Engineer Magazine* in 1996.



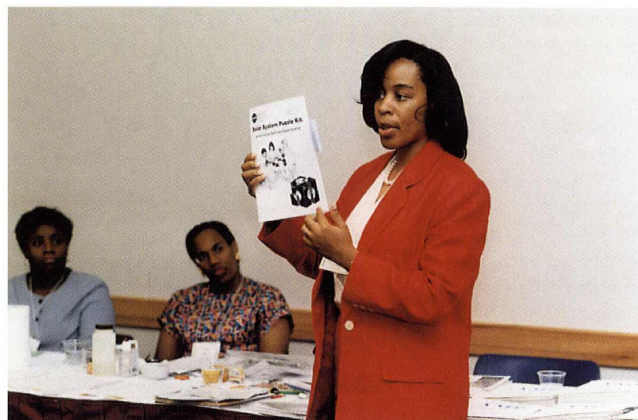
**Adriana Ocampo Uria** is currently working in Flight Projects Mission Operations at the Jet Propulsion Laboratory where she is the science coordinator to the Near Infrared Mapping Spectrometer (NIMS), an instrument which is part of the Galileo mission to Jupiter. She also worked on the Mars Observer Project as the Thermal Mission Spectrometer (TES) instrument science representative, and was recently selected as a co-investigator in the Hermes mission to explore the planet Mercury and an Io Mapper mission to Jupiter's moon. Born in Colombia and raised in Argentina, she came to the United States 25 years ago. She is a student pilot and has applied to become a Space Shuttle mission specialist.



- 9:45 - 11:30 Teacher Preparation Workshops (Concurrent Sessions):  
 Teaching Math in an Inclusive Education Setting - John Mullen, Asst. Prof.,  
 Industrial Engineering, NMSU - Corbett Center Otero Room  
 Exploring the Possibilities with Voice Interactive Software - Barbara Powell,  
 Assoc. Prof., Engineering Technology, NMSU - Jacobs Hall, Room 204
- 10:00 - 5:30 Exhibits Open throughout Corbett Center
- 11:00 - 11:15 Break
- 11:15 - 12:15 Session Two — Concurrent Student Presentations - Corbett Center New Mexico Room,  
 Doña Ana Room, Senate Chambers, Senate Gallery, Rooms 214, 218, 315, 317
- 12:15 - 1:45 Lunch/Special Farewell to Dr. William McHenry - Corbett Center Ballrooms

## Teacher Preparation Workshops

Veniece Keene, Philadelphia AMP, displays materials for “Innovative Teaching Strategies,” one of three workshops designed for AMP Teacher Preparation students.



- 2:00 - 4:00 AMP Conference Photo Session - Corbett Center Auditorium
- |                                      |  |
|--------------------------------------|--|
| 2:00 - 2:06 — Philadelphia & Alabama | 3:01 - 3:07 — Univ. of Texas System                                  |
| 2:06 - 2:12 — New Mexico             | 3:07 - 3:13 — CUNY   |
| 2:12 - 2:18 — California             | 3:13 - 3:19 — Heartland's & Oklahoma                                 |
| 2:18 - 2:24 — Chicago                | 3:19 - 3:26 — Metro-Detroit  |
| 2:24 - 2:31 — North Carolina         | 3:26 - 3:32 — South Carolina   |
| 2:31 - 2:37 — All Nations            | 3:32 - 3:38 — SUNY & WAESO   |
| 2:37 - 2:43 — Louisiana              | 3:38 - 3:45 — Maryland   |
| 2:43 - 2:49 — Florida/Georgia        | 3:45 - 3:51 — Mississippi & Mid-South                                |
| 2:49 - 2:55 — Texas                  | 3:51 - 4:00 — Colorado & Cal. State &<br>Wash-Baltimore-Hampton Rds. |
| 2:55 - 3:01 — Puerto Rico            |  |
- 3:30 - 5:30 Poster Judging - Corbett Center Halls
- 3:45 - 4:45 Session Three — Concurrent Student Presentations - Corbett Center New Mexico  
 Room, Doña Ana Room, Senate Chambers, Senate Gallery, Rooms 315, 317
- 4:00 - 5:00 Graduate Research Orientation Workshop — Doris Roman, National Consortium  
 for Graduate Degrees for Minorities (GEM) - Corbett Center Senate Chambers
- 4:15 - 6:00 Teacher Preparation Workshop: Innovative Teaching Strategies — Veniece Keene,  
 Philadelphia AMP - Corbett Center Otero Room
- 5:00 - 6:00 Session Four — Concurrent Student Presentations - Corbett Center New Mexico Room,  
 Doña Ana Room, Senate Chambers, Senate Gallery, Rooms 315, 317
- 6:00 - 6:30 Poster Take-down
- 6:30 - 7:30 Dinner - Corbett Center Ballrooms
- 7:30 - 8:00 Leon Metz, Local Historian — “Metz on the West” - Corbett Center Ballrooms
- 8:00 - 9:00 Jose Tena & The Ballet Folklorico - Corbett Center Ballrooms



## Special Farewell to Dr. William McHenry

The 1997 Summer Research Conference was the site selected by AMP project directors to bid farewell to Dr. William McHenry, former AMP Program Director who was appointed Assistant Commissioner of Education for Academic Affairs for Mississippi Institutions of Higher Learning. The project directors expressed appreciation to Dr. McHenry for his dedication to minority students' academic achievement in SEM disciplines and his role in making the AMP program successful.



*Ms. Judy Gobert presents handmade quilt to Dr. McHenry from All Nations AMP*

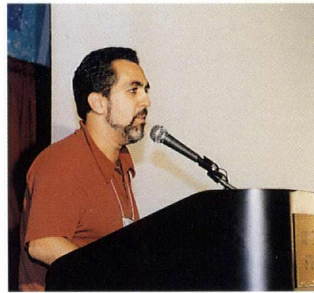


*Dr. Louis Dale presents Keepsake Poster to Dr. McHenry from 19 AMP Project Directors, Dr. Luther Williams, and Dr. Roosevelt Calbert*

## Alliances Make Presentations to Dr. McHenry



*Dr. Richard Sullivan, Mississippi AMP*



*Dr. Anthony Garcia, Arizona AMP*



*Dr. Neville Parker, New York City AMP*



*Dr. Pablo Arenaz, Texas AMP*



*Dr. Ricardo Jacquez, New Mexico AMP*



*Dr. Manuel Gomez, California AMP*



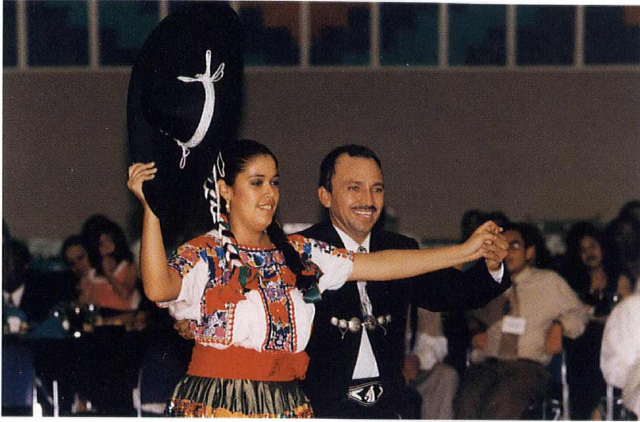
*Dr. Earl Mitchell, Oklahoma AMP*



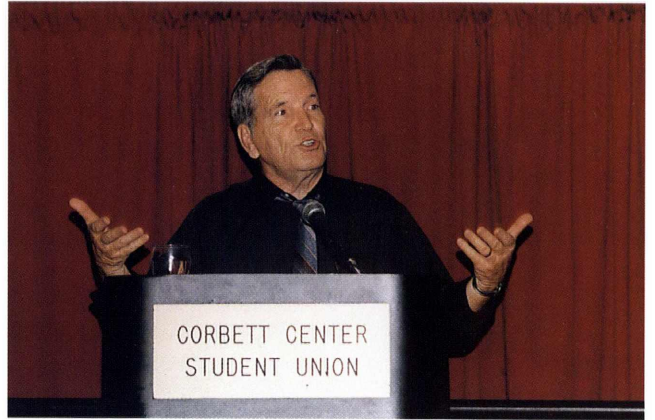
*Dr. Roosevelt Calbert and Dr. William McHenry discuss program*



## More Taste of New Mexico



*More dancing*



*Historian Leon Metz tells stories of New Mexico's past*

### Sunday, July 27, 1997

- 7:30 - 8:30 Continental Breakfast - Corbett Center Ballrooms  
8:45 - 10:45 Women in Science and Engineering — Moderator: Barbara Kimbell, Asst. Dir.,  
New Mexico Collaborative for Excellence in Teacher Preparation (CETP)  
Panel Speakers — Dr. Ellen Ochoa, NASA Astronaut; Dr. Kari Magee, Jet Propulsion  
Laboratory; Sandra Begay-Campbell, Cynthia Harvey, Sandia National Laboratories -  
Corbett Center Lower Level  
10:45 - 11:00 Break  
11:00 - 1:30 Awards Luncheon — Dr. Roosevelt Calbert, Division Director, NSF - Corbett Center  
Ballrooms

## Women in Science and Engineering



*Panel Members*

*Dr. Ellen Ochoa received her B.S. degree in Physics from San Diego State University and her M.S. and Ph.D. in Electrical Engineering from Stanford University. Selected by NASA in 1990, Dr. Ochoa became the first Hispanic woman to serve as an astronaut in July 1991. Her technical assignments to date include flight software verification in the Shuttle Avionics Integration Laboratory, crew representative for flight software and computer hardware development, and crew representative for robotics development, testing, and training. A veteran of two space flights, Dr. Ochoa has logged over 484 hours in space. She is currently the Assistant for Station to the Chief of the Astronaut Office, directing crew involvement in the development and operation of the Station.*



**Kari Magee** completed her Ph.D. in Geological Sciences at Brown University in Providence, Rhode Island, in 1994. Her research focused on Venus volcanism using radar data obtained by the Magellan and Venera 15/16 missions and the Arecibo Observatory in Puerto Rico. She is currently working at the Jet Propulsion Laboratory as a science coordinator for the Solid State Imaging (SSI) team on the Galileo Project now in orbital operations at Jupiter. Dr. Magee served as session chair for the Brown-Vernadsky Microsymposia, Moscow, Russia, in 1990, 1992, and 1993; and at the 23rd Lunar and Planetary Science Conference in Houston, Texas, in 1992. She was an invited speaker at the Institute of Space and Aeronautical Science in Sagami-hara, Japan, and at the Geological Survey of Japan, Tsukuba, Japan, in 1993.

**Sandra Begay-Campbell** is Navajo and a Senior Member of the Technical Staff at Sandia National Laboratories (SNL). After receiving her bachelor's degree in civil engineering from the University of New Mexico, Ms. Begay-Campbell worked at Lawrence Livermore National Laboratories. She received her master's degree in structural engineering from Stanford University and then worked at Los Alamos National Laboratories until her recent move to Sandia. She is currently on the strategic corporate planning team and works on operational planning at Sandia National Laboratories. Ms. Begay-Campbell is active in professional and community organizations including Chair of the Board of Directors for the American Indian Science and Engineering Society, Sandia National Laboratories' American Indian Outreach Committee, and the National Science Foundation's National Advisory Committee for the Systemic Teacher Excellence Project (STEP) at Montana State University.

**Cynthia L. Harvey** is the Deputy Program Manager for the Laboratory Directed Research and Development (LDRD) Program at Sandia National Laboratories. She was project leader and structural engineer on a variety of projects including project engineer for the design and construction of a state-of-the-art standards calibration laboratory. In 1993, she was appointed to the Distinguished Member of the Technical Staff level for outstanding technical contributions as a structural engineer and project leader of multimillion dollar construction projects. In her current position as Deputy Program Manager, she is responsible for the operational management of the LDRD program which includes reporting, project selection, and development of systems to satisfy current and future LDRD requirements. Ms. Harvey received her B.S. in Civil Engineering from Prairie View A&M University and is currently pursuing a M.S. in the same field from the University of New Mexico.

## *Conference Awards*



*Awards Luncheon*



*Dr. Calbert addresses Luncheon Attendees*



*Happy Award Winners*



*Happy Award Winners*



# Competition Winners

## Oral Presentations

### Engineering

First: Judith Carmona; University Texas System  
Second: Curtis Taylor; Maryland  
Third: Augustine E. Obobaifo; Colorado

### Life Sciences

First: Maria Ramirez; Texas  
Second: Monique Robinson; Louisiana  
Third: Chris Graves; North Carolina

### Math/Computer Sciences

First: Rahman Henderson; Maryland  
Second: Christopher Vinegar; Metro-Detroit  
Third: Nkhensani Nguyuza; Maryland

### Physical Sciences

First: Sally Daganzo; California  
Second: Rose Ann Blenman; Louisiana  
Third: Christine Lewis; South Carolina

### Overall Winner

First: Gerald Gracia; North Carolina  
Second: Carolina Trevizo; New Mexico  
Third: Christopher Maestas; New Mexico

## Poster Presentations

### Engineering

First: John Padilla; New Mexico  
Second: Kelly Taylor; Alabama  
Third: Anthony Esquibel; New Mexico

### Life Sciences

First: Rachelle Salomon; Maryland  
Second: Irma Garcia and Lara Gutierrez; Chicago  
Third: Diana Albay; California

### Math/Computer Sciences

First: Orlando Esparza, Jr.; New Mexico  
Second: Alfonso Garcia; California  
Third: Josue Castillo; New Mexico

### Physical Sciences

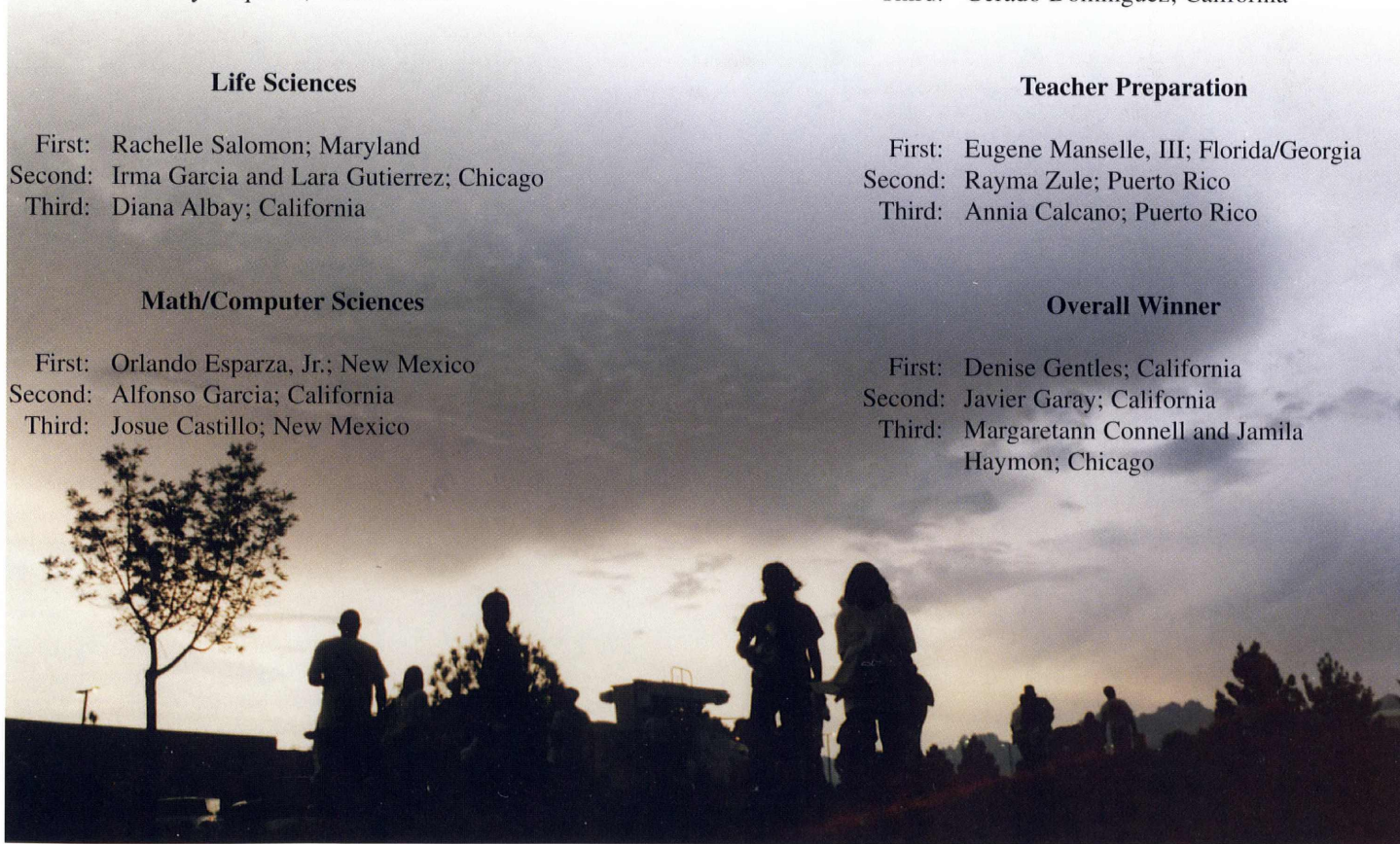
First: Denise Rodriguez; Puerto Rico  
Second: Tracee Walker; Philadelphia  
Third: Gerado Dominguez; California

### Teacher Preparation

First: Eugene Manselle, III; Florida/Georgia  
Second: Rayma Zule; Puerto Rico  
Third: Annia Calcano; Puerto Rico

### Overall Winner

First: Denise Gentles; California  
Second: Javier Garay; California  
Third: Margaretann Connell and Jamila Haymon; Chicago





# Conference Participants



Alabama



California



Chicago



Colorado



Florida-Georgia



Heartland's



Louisiana



Maryland



Metropolitan Detroit



Mid-South



Mississippi



All Nations





New Mexico



New York



North Carolina



Greater Philadelphia



Puerto Rico



South Carolina



SUNY



Texas



University of Texas System



WAESO



Washington-Baltimore-Hampton Roads



# Oral Presentations

## Engineering

**Alonso, Jose;** Engineering; Dr. Rolando Quintana; UT System; “*An Ergonomic Patient-Handling Assessment And Design Methodology*”

**Black, Christopher A.;** Engineering; Brad Donaldson; New Mexico; “*Computer Simulation of Periodic-Unsteady Transition on a Turbine Blade*”

**Flores, Anita E.;** Mechanical Engineering; Malcolm J. Andrews; Texas; “*Compound Shear and Buoyancy Driven Mixing in the Environment*”

**Johnson, Willie, Jr.;** Electrical Engineering; Dr. Karen Butler; Texas; “*Modeling an Overcurrent Relay Using a Digital Signal Processor*”

**Lujan, Randy;** Engineering; Max Maez; “*Environmental Sampling for the Hydrology Team at Los Alamos National Laboratory*”

**Mann, Herbie R.;** Mechanical Engineering; Prof. James Clum; New York State; “*Experimental Determination of Electrical and Thermal Power*”

**Nungaray, Juanita;** Electrical Engineering; Dr. George Castro; California State University; “*Redesign of a Photoelectron Microscope to Improve Positioning Accuracy*”

**Obobaifo, Augustine E.;** Engineering; James P. Avery; Colorado; “*MEDAC/SC Testing and Diagnosing A Software Engineering Approach*”

**Powell, John, Jr.;** Chemical Engineering; Florida-Georgia; “*The Diversity of Environmental Research at Monsanto*”

**Ramirez, Elizabeth Ann;** Electrical Engineering; Dr. Karen L. Butler; Texas; “*Incorporating Fuzzy Logic in an Artificial Neural Network*”

**Rinaldi, Carlos M.;** Chemical Engineering; Dr. Carlos A. Ramirez; Puerto Rico; “*Mass Transport in the Hollow Fiber-Type Artificial Pancreas Device*”

**Saavedra, Patricia;** Engineering; Dr. B. Donaldson and S. Chacon; New Mexico; “*Cardiac Flow Phantom for Quality Control of Medial Doppler Ultrasound*”

**Taylor, Curtis, R.;** Mechanical Engineering; Dr. Patricia Mead; Maryland; “*Characterization of Fiber Optic Epoxy Adhesives: Lap Shear Measurement*”

**Trevizo, Carolina T.;** Engineering; New Mexico; “*Prediction of Microbial Toxicity of Industrial Organic Chemicals*”

**Vasquez, Marvin J.;** Engineering Science; Dr. Clive R. Clayton; New York State; “*Design and Implementation of Secondary Ion Mass Spectrometry for the Study of the Interfacial Chemistry of Thermally Sprayed Coatings*”

**Villarreal, Oki;** Engineering; Chicago; “*Quadratic Buck Converter*”

## Life Sciences

**Blanco, Angel R.;** Life Science; Dr. Stephen Sulkin; Florida-Georgia; “*Effects of Density Controlled Diets on Larvae of the Crabs, Cancer Magister and Cancer Oregonensis*”

**Davis, Linda C.;** Biology; Dr. Tobias Baskin; Heartland's; “*The Reversibility of Morphogenic Inhibitors in Arabidopsis Thaliana*”

**Eagle, Ryan P.;** Environmental Science; Kerry Heartman; All Nations; “*Drug and Alcohol Use Within a Selected Population of High School Students*”

**Gracia, Gerald J.;** Biology; Dr. Mark Nelson; North Carolina; “*In Vivo and In Vitro Studies Support Selenium as a Potential Chemo-Preventive Agent for Colon Cancer*”

**Graves, Christopher A.;** Biology; Dr. J. A. Richmond and Dr. C. Schal; North Carolina; “*Isolation and Identification of Cuticular Hydrocarbons in the Nantucket Pine Tip Moth: A Potential New Tool in Taxonomy*”

**Gutierrez, Abel;** Biology; H. Kirk Hammond; California; “*Expression of G-protein Receptor Kinase in Failing Myocardium*”

**Homawoo, Richard;** Computer Science; Prof. Joseph Malinsky; New York City; “*Charge Transfer Conductivity Along DNA Molecules*”

**Hunter, Terry E.;** Math/Computer Science; Bob Johnke and Doug Crebs; All Nations; “*Study on the Presence of Coliform Bacteria in the Open Streams on the Rocky Boy Reservation*”

**Jackson, Nakia C.;** Life Science; Milton Fingerman; Louisiana; “*Reproductive Toxicity of Naphthalene in Male Crayfish*”

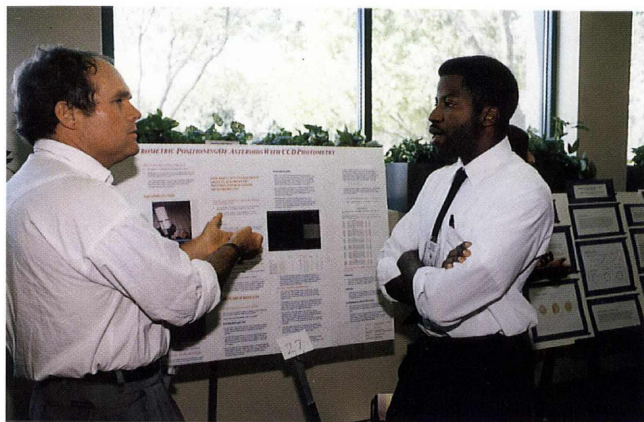
**Macias, Luis H.;** Physiological Science; Eli E. Sercarz; California; “*The Immunodominance of MBP Ac1-9*”

**Person, Donna;** Life Science; Ramachandra S. Homane; Maryland; “*The Synthesis of a Novel Fat Nucleoside -5- Triphosphate Containing a 5:7 fused Heterocycle Ring System*”

**Ramirez, Maria S.;** Biology; Dr. John C. Perez; Texas; “*The Study Of Crotalus Viridis Lutosus Venom By Electrophoretic Titration And High Performance Liquid Chromatography*”







**Robinson, Monique V.;** Life Science; Dr. Sylvanus Nwosu; Louisiana; *"Maintenance and Growth of Phaneochaete Chrysosporium on Solid Agar for Use in Liquid Bioreactor Systems Abstract"*

**Salazar, J. Cristobal;** Biology/Psychology; Dr. Todd Steck; North Carolina; *"Facilitation of the VBNC Condition in R. meliloti by Exposure to a Heavy Metal"*

**Soden, Clyburn E., Jr.;** Life Science; Maryland; *"Structure of the Carboxy-terminal fragment of the Apo-Biotin Carboxyl Carrier Subunit of Escherichia Coli Acetyl-CoA Carboxylase"*

**Watson, Stephanie;** Life Science; Dr. Henry Bart; Louisiana; *"Locating the Transcription Terminator"*

### Math/Computer Sciences

**Henderson, Rahman;** Math; Prof. R. John Hansman; Maryland; *"A Study of GPS Based Attitude Indicators and Instruments Update Rate"*

**Maestas, Christopher D.;** Math/Computer Science; Dr. Joseph D. Torres; New Mexico; *"Centralizing Departmental Data Storage"*

**Nava, Manuel;** Computer Science; Evans Adams; Colorado; *"Linux Operating System"*

**Nguyuzu, Nkhensani;** Math/Computer Science; Maryland; *"The Use of Fluorescence Microscopy to Detect Transfection Efficiency"*

**Rehman, Naved;** Mathematics; Prof. Jonathan Huntley; New York City; *"Asymptotic Expansions"*

**Seifullah, Jamilah M.;** Computer Science/Mathematics; Dr. Lawrence Sher; New York City; *"Series Approximations of Functions and Variation of Polar and Cartesian Representations of Functions"*

**Vinegar, Christopher;** Computer Science/Engineering; Dr. Bushan Bahatt; Metropolitan Detroit; *"Transmission Design through Constraint Propagation"*

### Physical Sciences

**Asuquo, Blessing E.;** Environmental Geology; Dr. Ann Wiley; Maryland; *"Investigation of the Expansive Behavior of Chromium Tailings"*

**Bell, Kendra C.;** Biology; Pam Jackson; Mississippi; *"Ambient Noise"*

**Blenman, Rose-Ann;** Computer Science/Physics; Dr. Sylvanus Nwosu; Louisiana; *"Factorial Analysis of Experimental Data"*

**Carmona, Judith;** Chemistry; Norma R. De Tacconi and K. Rajeshwar; UT System; *"Unusual Photoeffects in Ni/TiO<sub>2</sub> Nanocomposit Electrodes"*

**Daganzo, Sally;** Chemistry; Angelica Stacy and Newell Washburn; California; *"Low Temperature Synthesis of Lanio<sub>3</sub> From Hydroxide Melts"*

**Figuerola, Yvette M.;** Chemistry; Ana Fraiman; Chicago; *"Molecular Modeling in Chemistry"*

**Gates, Arther T.;** Physical Science; Mississippi; *"Chlorination of Plant Service Water: The Effect of Temperature on the Amount of Sodium Hypochlorite Needed to Reach Chlorination Breakpoint"*

**Hawkins, Casey;** Environmental Science; Peter Ryan; All Nations; *"Ongoing Water Quality: Investigations on the Flathead Indian Reservation"*

**Hollins, Bernard;** Chemistry; Dr. John W. Owens; Louisiana; *"The Leaching of Phenol Derivatives from a Portland Cement Matrix"*

**Lewis, Christine;** Geology; Dr. Michael W. Howell; South Carolina; *"Planktonic Foraminiferal Variations in Eastern Mediterranean Sapropels: Assessing the Roles of Basin Productivity and Anoxia"*

**Williams, Anthony;** Physics; Dr. Donald K. Walter; South Carolina; *"Astrophysical Image Processing of the HII Region M8"*





# Poster Presentations



## Engineering

**Altamirano, Karen;** Electrical Engineering; Paul Furth; New Mexico; *"Current-to-Voltage and Voltage-to-Current Measurements Circuits"*

**Black, Stephen;** Engineering; Brad Donaldson; New Mexico; *"Estimation of the Limits of Flammability for Mixtures of Butanol/Water From Flash Point Data"*

**Cartagena, Daniel G.;** Engineering; Armando A. Rodriguez; WAESO; *"Modeling, Simulation, and Real Time Control of an Inverted Pendulum on a Cart"*

**Delgado, Jacinto;** Engineering; John T. Zellmer; New Mexico; *"Characterization of Weathered-Rock Engineering Properties"*

**Esquibel, Anthony;** Engineering; Burl Donaldson; New Mexico; *"Autoignition Temperature for Ethanol As A Function of Pressure And Equivalence Ratio"*

**Garay, Javier;** Electrical Engineering/Materials; Zuhair Munir; California; *"Self-Propagating High Temperature Synthesis of Intermetallic-Ceramics"*

**Garza, Armando;** Engineering; UT System; *"Infra-red Thermal Imaging Camera"*

**Maez, J. Carlos;** Geological Engineering; Dr. John Zelmer; New Mexico; *"Geologic Hazards in Northwest Las Cruces, New Mexico"*

**Taylor, Kelly;** Zoology; Dr. Mrinal Thakur; Alabama; *"Synthesis of a Polymeric Semiconductor, Polyaniline"*

**Urban, Melissa J.;** Engineering; Dr. Adrian Hanson; New Mexico; *"Modeling the Mimbres Aquifer"*

## Life Sciences

**Albay, Diana;** Biology; Kathy Foltz; California; *"Characterization Of The Map Kinase Pathway In Echinoderms"*

**Alva, Jackelyn A.;** Biology; Renato J. Aguilera; California; *"Studies On the DNA Binding Activity of RAG-1"*

**Amador, Gloria M.;** Mathematics and Applied Science; V. R. Edgerton and R. J. Talmadge; California; *"Growth Hormone Has No Effect on Rat Adductor Longus Muscle During a 4-Day Spaceflight"*

**Ayala, Eduardo;** Biology; Alan Garfinkel; California; *"Confocal Microscopy Imaging"*

**Burroughs, Tammy T.;** Biology; Dr. Juliette B. Bell; North Carolina; *"Analysis of Ni<sup>2+</sup> Mutagenicity During In Vitro DNA, Synthesis by E. Coli DNA Polymerase I"*

**Edwards, Kenneth;** Biology; Dr. John Mayfield; North Carolina; *"Particle Size Analysis to Determine the Prevalence of Airborne Fungal Spores"*

**Fahim, Samar;** Life Science; Dr. Stokes Baker; Metropolitan Detroit; *"Will Evolution Select for Genetically Engineered Plants?"*

**Figuroa, Yolanda;** Biological Sciences; Alan Stemler; California; *"Photosystem II Particles Within Thylakoids Demonstrate Greater Carbonic Anhydrase Activity After Removing Extrinsic Proteins"*

**Garcia, Irma and Gutierrez, Lara;** Life Science; Jennifer Derenne and Joanna Beck Maza; Chicago; *"The Teratogenic Effects Of Diphenylhydantoin On A/J And A/J Wyns Mice And Crosses Between Them"*

**Gentles, Denise K.;** Biomedical Science; Ameae Walker; California; *"The Effects of Estrogen on Prolactin Gene Expression in NMU Cells"*

**Magaña, Marisa;** Life Science; Timothy F. Osborne; California; *"Identification of Cis-Acting Elements Required for Sterol Regulation of the Fatty Acid Synthase Promoter"*

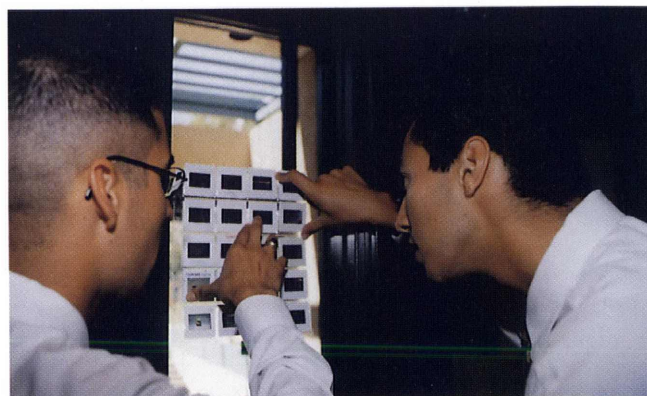
**Martin, Tawana;** Biology; Dr. Lucia Pirisi-Creek; South Carolina; *"Examination of Human Papillomasviruses - HPV-16E5"*

**Meuniot, Vanessa L.;** Physiology; Rosemary Walzem; California; *"Species Differences Between Coturnix coturnix japonica and Gallus domesticus in Yolk Precursor-VLDL Lipoproteins"*

**Mussiott, Ana M.;** Biology; Pablo Arenaz; UT System; *"PCR Based Cloning of a Hamster Ribosomal AP Endonuclease"*

**Nelson, Shareka;** Life Science; A. Yusuf, D. S. R. Sarma and O. Okediji; Florida-Georgia; *"Dihydropyrimidine Dehydrogenase Activity In Rat Liver Hepatic Nodules"*

**Okoro, Bridget;** Life Science; Rabiatu Al-Hassan and Mark Erhart; Chicago; *"Use of Congenic Mouse Strains for Region-Specific Cloning and Genetic Mapping"*





**Salomon, Rachelle;** Life Science; Dr. Andrew G. Campbell; University of Maryland System; "Isolation and Characterization of the Trypanosome Antigen FLA-2"

**Thomas, Alycia;** Pharmacology; Prof. Peter Brink; SUNY; "The Effect of Gap Junctions on Cardiac Cells"

**Thomas, Tracee;** Chemistry; Dr. Diola Bagayoko; Louisiana; "Aquatic Plants in Waste Water Treatment"

**Villareal, Carlos;** Biology; Dr. Maria E. Alvarez; WAESO; "The Effect of  $K^+$ ,  $Mg^{2+}$  and  $Al^{3+}$  on reversible inactivation of MS2 Phage by Chlorine"

**Zavala, Jessica;** Life Science; J. B. Ulreich, R. A. Chavez, J. L. Boles, M. Maveddai, and P. Nakazato; WAESO; "Hepatoprotective Effects of Dimethyl Sulfoxide on Livers from Non-Heart-Beating Donor Rats"

### Math/Computer Sciences

**Castillo, Josue;** Engineering Technology; Holly Ricketts; New Mexico; "Computer Networks Operating Systems"

**Crowley, Tiffany;** Math/Computer Science; Portia Harris; Mississippi; "Sediment Resuspension and Transport in the Marine Environment"

**Esparza, Orlando E., Jr.;** Electrical Engineering; Dr. Juris Reinfelds; New Mexico; "How Programming for Beginners Can Be Made Easy"

**Garcia, Alfonso;** Physics; Motohico Mulase; California; "3-D Soliton Solutions of the KP Equation"

**Gulley, Michael G., Jr.;** Mathematics; Prof. John Douglass, Jr.; Florida-Georgia; "Proof by the Principle of Mathematical Induction and the Proof by Strong Induction (PSI)"

**Herrera, Jose;** Computer Science; Dr. Susan Feinberg, Dr. James Roberge, Dr. Peter Johnson; Chicago; "Customer Satisfaction Surveys On The World Wide Web"

**Salazar, Miguel;** Engineering Technology; Holly Ricketts; New Mexico; "UNIX and Windows NT Administration and Configuration"

**Torres, Brenda;** Computer Science; Glenn Langhorse; All Nations; "HAL-4"

### Physical Sciences

**Alaniz, Javier R.;** Physical Science; Dr. Ted Bartlett and Dr. Ike Klundt; Colorado; "Synthesis of Grandisol"

**Anguera, Montserrat C.;** Environmental Chemistry; Barbara Sawrey; California; "Protect Your Research and the Environment Using an In-Line Small Bore, Thick Walled Glass Tube to Increase Rotary Evaporator Efficiency"

**Cheeks, Kimmecia D.;** Physical Science; Heartland's; "Protein Folding: A Small-Angle Neutron Scattering Study"

**Dominguez, Gerardo;** Physics; Robert Lin; California; "Laboratory Tests of Pulse Discrimination Techniques for Correcting the Effects of Radiation Damage on Germanium Detectors"

**Duenas, Ely N.;** Computer Science; James Frost; New York City;

"Investigation of Stratospheric Aerosols in Jupiter's Atmosphere"

**Francis, Karl;** Engineering Science; Prof. Irving Robbins; New York City; "Asteroid Positional Calculations"

**Garcia, Elvia E.;** Chemical Engineering; Brian P. Buffin; Metropolitan Detroit; "Nitrogen-Based Ligands For Incorporation Into Biphasic Catalysts"

**Green, Joan;** Physics; Dr. James Maclaren; Louisiana; "Analysis of Low Energy Electron Diffraction Data"

**Harris, Ernest;** Physics; Dr. Brent Koplitz; Louisiana; "Towards an Understanding of Carbon Removal Pathways in the Photoassisted Growth of Pt Films from  $MeCpPt(CH_3)_3$ "

**Harris, Kinesha;** Chemistry; Dr. Maria Ngu; Louisiana; "Synthesis and Characterization of a Macrocyclic Peptide Ligand"

**Johnson, Kamisha L.;** Chemistry; Wilfred Chen; California; "The Biodegradation Process for Phenol to Adipic Acid"

**Johnson, Martinique C.;** Physical Science; Dr. Robert Langley; Philadelphia; "Identification of Avidin Binding Proteins Associated With The Rat Brain Voltage Gated Sodium Channel"

**Miranda-Bulli, Isabel;** Chemical Engineering; Dr. José E. Cortés-Figueroa; Puerto Rico; "Activation of C-H Bonds By Transition Metal Complexes"

**Phifer, Julian Depriest;** Chemistry; Dr. Shawn Sendlinger; North Carolina; "Synthesis and Reactivity of  $NMoCl_3$  (bpy)"

**Rodriguez, Denise Y.;** Physics; Dr. Ernesto Esteban; Puerto Rico; "On The Existence of Prolate and Oblate Spheroidal Galaxies in Newtonian and Non-Newtonian Gravitational Physical Theories"

**Spencer, Moyah;** Physical Science; Tony E. Nicolas; New York City; "A Concise Synthetic Approach To Quinone Antibiotics"

**Walker, Tracee;** Physics; Dr. Robert Langley; Philadelphia; "Observation of the Motion of the Earth's Bow"

**Zuñiga, Lluvia;** Physics; Joel Fajans; California; "Instabilities in Pure Electron Plasma Vortices"

### Teacher Prep

**Beno, Luman;** Engineering; Patrick Scott; New Mexico; "New Ways of Teaching Mathematics"

**Calcaño, Annia;** Education/Chemistry; Jorge L. Colon; Puerto Rico; "Modification of Horse Heart Myoglobin With Ruthenium BIS (Bipyridine) Imidazole Complex"

**Connel, Margaretann and Haymon, Jamila;** Teacher Prep; Chicago; "Innovative Lesson Plans on Weather, Seasons, and Climate for All Students using a Thematic Integrated Approach"

**Manselle, Eugene, III;** Integrated Science; Florida/Georgia; "A Movement Toward Standards in Science Education"

**Zule, Rayma;** Chemistry; Javier Figueroa; Puerto Rico; "Puerto Rico-AMP Teacher Preparation Program"



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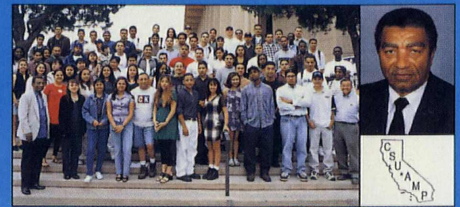
Alabama



California



California State



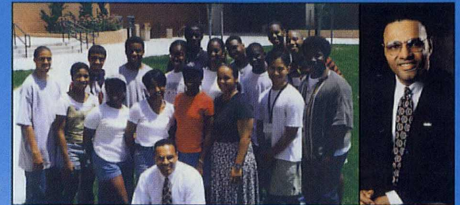
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**Dr. Luther Williams, Assistant Director for Education and Human Resources**  
*"Few professionals have served in such a challenging role; and even fewer have been as influential as Bill McHenry."*

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