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I.

THE FIFTEENTH ANNUAL
**UNDERGRADUATE BIOLOGY
RESEARCH
CONFERENCE**

January 24, 2004

15th Annual Undergraduate Biology Research Conference

Life Sciences South Building
Saturday, January 24, 2004

| | | |
|--------------------------|---|--|
| 8:00 am - 9:00 am | Students set up posters Refreshments Room 240 | |
| 9:00 am - 9:10 am | Welcome | |
| 9:10 am - 10:10 am | Poster Session I | |
| 10:10 am – 10:20 am * | Mini-awards Ceremony for Outreach Programs' Participants | |
| 10:20 am – 11:20 am | Poster Session II | |
| 11:20 am – 11:40 am | Introduction of Keynote Speaker | |
| | Keynote Address – “Five Steps Arizona is Taking to Achieve Prominence in the Biosciences: What it Means for You” | John Murphy Executive Director, The Flinn Foundation |
| 11:40 am - 12:40 pm | Poster Session III | |
| 12:40 pm – 1:00 pm | Presentation of Awards to Undergraduate Presenters | |

LIST OF UNDERGRADUATE PRESENTERS AND THEIR ABSTRACTS

FIFTEENTH ANNUAL UNDERGRADUATE BIOLOGY RESEARCH CONFERENCE

1. DOES GLIA-DEPENDENT AXON SORTING DETERMINE AXONAL TARGETS IN THE DEVELOPING OLFACTORY SYSTEM IN *Manduca sexta*? Mohammed Abdelwahab
2. IRON-DEPENDENT REGULATION OF DUODENAL CYTOCHROME B AT THE TRANSCRIPTIONAL LEVEL. Shahid Ahmad
3. GROWTH CONE MORPHOLOGY IN THE SORTING ZONE OF THE DEVELOPING OLFACTORY PATHWAY OF THE MOTH. Lacey Alhandy
4. IS SLEEP APNEA ASSOCIATED WITH A COLLAPSIBLE PHARYNGEAL AIRWAY? Elena Antonio
5. TROJAN ALPHA-TURN-ALPHA-AN HIV TARGETING MOLECULE. Dawn Barnes
6. SURVIVAL OF BACTERIA IN EXTREME ENVIRONMENTS. Liese Beenken
7. PRENATAL NICOTINE EXPOSURE AFFECTS BREATHING PATTERN AND APNEA INCIDENCE IN AWAKE NEONATAL RATS. Amanda Brown
8. SYNTHESIS OF NOVEL α -MSH ANALOGUES BASED ON AGOUTI-RELATED PROTEIN SCAFFOLD. Chris Cabello
9. REGULATION OF p53 NUCLEAR LOCALIZATION. Steven Carey
10. PLACE CELLS, HEAD DIRECTION, AND SPATIAL LEARNING IN THE RAT BRAIN. Amanda Casale
11. CYTOSOLIC SMALL HSPTS AND THERMOTOLERANCE IN TRANSGENIC PLANTS. Jennifer Corrigan
12. THE IMMUNOSUPPRESSIVE EFFECTS AND BIOCHEMISTRY OF TUMOR EXPRESSED ALBUMIN (TEA). Jane Davis, Angela Romanoski
13. INVESTIGATION INTO THE MECHANISM OF PHARMACOLOGIC INDUCTION OF FETAL HEMOGLOBIN. Tiffany Davis
14. EFFECTS OF VOLUNTARY EXERCISE TRAINING ON INSULIN ACTION IN THE HYPERTENSIVE AND INSULIN-RESISTANT TG(mREN2)27 RAT. Cody Diehl
15. SUPPLEMENTATION OF PROBIOTIC BACTERIA PREVENTS THE DEVELOPMENT OF COLITIS IN SCID MICE. Sarah Doelle
16. ISOLATION OF A BRASSINOSTEROID BIOSYNTHESIS MUTANT WITH A THERMOTOLERANCE DEFECT. Mindy Escobar
17. DURA SUBSTITUTION IN THE RABBIT: COMPARISON OF A NOVEL BIOMATERIAL WITH TWO CLINICALLY APPROVED MATERIALS. Michael French
18. STUDY OF SPECIATION AND NATURAL SELECTION IN BDELLOID ROTIFERS USING THE CONSERVED SECONDARY STRUCTURE OF ITS AND 5.8S RNA. Marlea Gemmel
19. GENE EXPRESSION PROFILE OF HUMAN UMBILICAL CORD BLOOD STEM CELLS.

Veronica Gonzalez

20. INDUCTION OF ALPHA 6P INTEGRIN IN ACTIVATED T-LYMPHOCYTES. Albert Gutierrez
21. MOLECULAR AND FUNCTIONAL COMPARISON OF 1,25(OH)₂D₃ AND THE NOVEL VITAMIN D RECEPTOR LIGAND, LITHOCOLIC ACID, IN ACTIVATING CYP3A4 TRANSCRIPTION. Neal Hall
22. THE HUMAN P AND MATP GENES ARE ASSOCIATED WITH VARIATIONS IN HUMAN CONSTITUTIVE PIGMENTATION. Miquia Henderson
23. IMMUNOGENICITY OF POLYETHYLENE GLYCOL (PEG)-BASED HYDROGEL SEALANT IN LAPAROSCOPIC PORCINE PARTIAL NEPHRECTOMY. Wyatt Ho
24. TETRACHLOROETHYLENE ANAEROBIC DEGRADATION IN THE PRESENCE OF DIFFERENT REDOX MEDIATORS BY GRANULAR SLUDGE. Ana Hoffnagle
25. ANATOMICAL CIRCUITS UNDERLYING THE FREQUENCY MAP IN THE AUDITORY THALAMUS. Michael Holmes
26. CONSTRUCTION AND CHARACTERIZATION OF A SAFE AND EFFECTIVE GENE THERAPY EXPRESSION VECTOR FOR CANCER GENE THERAPY. Melba Jaramillo
27. DOWNREGULATED ANTIOXIDANT DEFENSIVE ENZYME EXPRESSION IS CORRELATED WITH POOR SURVIVAL IN DIFFUSE LARGE B-CELL LYMPHOMA. David Johnson
28. DIFFERENT FUNCTIONAL IMPACT OF TWO COMMON VITAMIN D RECEPTOR GENE POLYMORPHISMS AND IMPLICATIONS FOR LONG-TERM OSTEOPOROSIS RISK. Magdalena Kaczmariska
29. BONE REMODELING TRENDS IN CALBINDIN-D28K KNOCKOUT MICE. Devin Kim
30. NUCLEOTIDE VARIABILITY IN A KURDISH JEW POPULATION AT G6PD, A TARGET OF SELECTION BY MALARIA IN HUMANS. Julia Kim
31. CHARACTERIZATION OF CUSF, A NOVEL COPPER BINDING PROTEIN FOUND IN THE PERIPLASM OF *E. COLI*. Josh Kittleson
32. FATIGUING STIMULATION OF GHOST CRAB EXTENSOR CARPOPODITE IS NOT ACCOMPANIED BY AN ACCUMULATION OF INORGANIC PHOSPHATE IN MUSCLE HOMOGENATES. Vanessa Klee
33. EFFECTS OF MUC1 ON THE DEGRADATION OF EGFR IN BREAST CANCER. Wendy Knowlton
34. GENOME-BASED RNA INTERFERENCE SCREEN IDENTIFIES CUP-2, A PROTEIN THAT REGULATES ENDOCYTOSIS IN *CAENORHABDITIS ELEGANS*. Sarah Knuth
35. INTROGRESSION OF ABPA, A CANDIDATE GENE FOR REPRODUCTIVE ISOLATION, IN A HYBRID ZONE BETWEEN *MUS MUSCULUS* AND *MUS DOMESTICUS*. Alana Kurosaki
36. THE CYCLO-OXGENASE 2-SELECTIVE INHIBITOR, CELECOXIB, MEDIATES GROWTH INHIBITION IN BREAST CANCER CELL LINES VIA DIVERSE PATHWAYS. Michelle LaGioia
37. MOLECULAR CHARACTERIZATION OF *CHR120* IN *ZEA MAYS*. Salomon Leija
38. STABLE EXPRESSION OF DS-RED FLUORSCENT PROTEIN IN MOUSE SARCOMA CCL-11 CELLS IN A BONE CANCER MODEL. Xin Luo

39. THE ROLE OF RAF-1 IN cAMP OVERSHOOT. Cristian Madar
40. PREDATORY BEHAVIORS OF NATURAL ENEMIES OF WHITEFLY IN NEW COTTON CULTIVARS. Katie Maish
41. PROLIFERATION OF HUMAN SKIN CELLS UNDER OXIDATIVE STRESS. Brittany Martin
42. VELCADE INDUCES CELL DEATH BY INDUCING ENDOPLASMIC RETICULUM STRESS AND CALCIUM-MEDIATED MITOCHONDRIAL PERTURBATION. Christina Megli
43. PHYLOGEOGRAPHY AND POPULATION STRUCTURE OF *Aedes Aegypti* IN ARIZONA. Sam Merrill
44. DEVELOPMENTAL DIFFERENCES IN ESTIMATES OF SEXUAL RISK AND BENEFITS AMONG ADOLESCENTS: A FUZZY-TRACE THEORY ANALYSIS. Kirsten Metz, Jennifer Roberts
45. MENTAL MAPPING INERTIA. Retsina Meyer
46. REVERSE GENETIC ANALYSIS OF THE EXTRACELLULAR DOMAIN OF THE RECEPTOR KINASE BRASSINOSTEROID INSENSITIVE 1 (BRI1) IN *Arabidopsis thaliana*. Rene Michel
47. ARC PROTEIN EXPRESSION AFTER SPATIAL EXPLORATION. Dalia Mikhael
48. INVOLVEMENT OF THE AMYGDALA IN MEMORY CONSOLIDATION OF A PLACE-DEPENDENT EYEBLINK CONDITIONING TASK. Heather Milliken
49. IDENTIFYING AND MAPPING MUTATIONS AFFECTING FRUIT SIZE IN *Arabidopsis thaliana*. Andrea Mitchell
50. THE ROLE OF *ACETOBACTER DIAZOTROPHICUS* IN THE GROWTH OF ASPARAGUS. Payam Morgan
51. FORWARD MUTAGENESIS TO IDENTIFY GENES IMPORTANT IN DIM 7 ROLE IN RTK SIGNALING. Ian Musil
52. FINDING GENES INVOLVED IN SYNAPTIC PLASTICITY IN DROSOPHILA. Zaneta Navratilova
53. FINDING THE PLANT GENES RESPONSIBLE FOR FRUIT DEVELOPMENT IN *ARABIDOPSIS THALIANA*. Danielle Nevarez
54. THE MCGURK EFFECT AND LANGUAGE DISORDERED CHILDREN. Mary Pankratz
55. MUSCLE SPECIFIC RING FINGER-2 (MURF-2) HAS MULTIPLE SUBCELLULAR LOCALIZATIONS AND IS REQUIRED FOR MICROTUBULE, INTERMEDIATE FILAMENT, AND SARCOMERIC M-LINE STRUCTURE IN STRIATED MUSCLE. Cynthia Perry
56. CHARACTERIZATION OF EYE3 IN *CHLAMYDOMONAS REINHARDTII*. Michael Pham
57. CYCLIN D1 AND PCNA EXPRESSION IN COLORECTAL CANCER. Veronica Placencio
58. EFFERENT CONTROL OF THE AUDITORY SYSTEM IN HUMAN LISTENERS. Kristin Robinson
59. CHEMOLITHOTROPHIC DENITRIFICATION LINKED TO SULFOXIDATOIN IN CONTINUOUS BIOREACTORS. Pieter Rowlette

60. EFFECTS OF GINGER EXTRACTS ON COX-2 ENZYME EXPRESSION AND ACTIVITY. Mansi Sarihan
61. BEHAVIORAL EXPRESSION OF DELAYED EARLY RESPONSE GENES IN THE RAT HIPPOCAMPUS. Michael Schaner
62. SYNTHESIS OF BENZYL ETHER AND BENZYL AMINE DENDRONS FOR DISASSEMBLY STUDIES. Charles Shanahan
63. EARLY STAGE SYNAPTOGENESIS IN THE OLFACTORY LOBE OF *Manduca sexta*. Cassandra Sutterfield
64. ANALYSIS OF RENAL INNER MEDULLARY COLLECTING DUCT GENE EXPRESSION IN AQUAPORIN KNOCKOUT MICE. Katherine Taylor-Garcia
65. DIVERSIFICATION OF THE SYMBIONTS OF LEAFHOPPERS. Phat Tran
66. THE EFFECTS OF BACTERIA AND TLCK ON HEMOCYTE MORPHOLOGY OF *Manduca sexta*. Hung Tran
67. IDENTIFICATION OF PROTEINS THAT INTERACTS WITH *CUP-5*. Sebastian Treusch
68. INVESTIGATING THE FUNCTIONAL PROPERTIES OF NEBULIN USING siRNA ANALYSIS. Melinda Valichnac
69. PRECISION-CUT RAT LIVER SLICE TECHNOLOGY: EFFECTS OF CARBON DIOXIDE VS. "RAT MIX" ANESTHESIA. Amanda Valles
70. INCREASED PLATELET-NEUTROPHIL CONJUGATE FORMATION DEMONSTRATES THAT DIABETIC BLOOD IS MORE REACTIVE TO THE EFFECTS OF SURGERY. Reina Watanabe
71. METHYLATION STATUS OF THE P16 CPG ISLAND IN SPUTUM SAMPLES FROM THE ARIZONA CANCER CENTER SELENIUM-LUNG CANCER PREVENTION TRIAL. Autumn Watson
72. AUTOLYSIS OF CALPAIN. Amanda Wendt
73. MAP-BASED CLONING OF *ARABIDOPSIS* THERMOTOLERANCE MUTANTS. Chris Wei
74. EXPRESSION OF H2AX IN STRESSED COLONIC TISSUE. Megan Wilson
75. EFFECTS OF ADDING PLANT HORMONES TO A HYDROPONICS NUTRIENT SOLUTION. Travis Lopez

II.

UNDERGRADUATE BIOLOGY RESEARCH PROGRAM

2003-2004

UNDERGRADUATE BIOLOGY RESEARCH PROGRAM
PARTICIPANTS AND FACULTY SPONSORS
2003-2004

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Iram Ahmad
Shahid Ahmad
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(MARC) STUDENTS
2003-2004*

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Rowena Campbell
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Veronica Gonzalez
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 Dr. Michael Wells
Dr. Mark Nelson
Dr. Theodore Glattke
Dr. Bernard Futscher

UBRP VISITING STUDENT RESEARCHERS
2003

BRAVO!

SARAH DOELLE

Academy of Sciences of the Czech Republic, Institute of Microbiology
Novy Hrádek, Czech Republic
Worked with Dr. Hana Kozakova in the Department of Immunology and Gnotobiology

HEATHER GRAY

Instituto de Investigaciones Biomedicas
Madrid, Spain
Worked with Dr. Sebastian Cerdan in the Laboratory of Imaging and Spectroscopy by Magnetic Resonance

JENNIFER HOY

University of Koln
Koln, Germany
Worked with Dr. Sigrun Korsching in the Institute for Genetics

RETSINA MEYER

Norwegian University of Science and Technology
Trondheim, Norway
Worked with Dr. Edvard Moser in the Center for the Biology of Memory

DANIELLE NEVAREZ

Instituto de Biologia Molecular y Celular de Plantas
Valencia, Spain
Worked with Dr. Cristina Ferrandiz in the Department of Developmental Biology

MARGARETHE STRINGHAM

Cayetano-Heredia University and P.R.I.S.M.A.
Lima, Peru
Worked with Dr. Robert Gilman in the Department of International Health

LEAH TATUM

University of Florence
Florence, Italy

Worked with Dr. Giancarlo Pepeu in the Department of Pharmacology

ERIC YIP

Pontificia Universidad Catolica del Ecuador

Quito, Ecuador

Worked with Dr. Patricio Ponce in the Department of Biological Sciences

BRAVO! DATABLITZES 2003

DAVID CARETTO

BRAVO! Participant

“Systemic Sclerosis, Switzerland, and Schoggi (Chocolate)”

and

HARDEEP PHULL

BRAVO! Participant

“Isolating cDNA and the Letter ‘Z’ in Bydgoszcz”

February 28, 2003

ROBERT SCHMITZ

BRAVO! Participant

“Fishing for Biological Partners in Toronto, Canada”

and

JENNIFER TALLEY

BRAVO! Participant

“Poking Fruit Flies in Sweden”

April 14, 2003

JENNIFER HOY

BRAVO! Participant

“Functional Analysis of Odorant Receptor-Ligand Interactions in Zebrafish”

June 30, 2003

HEATHER GRAY

BRAVO! Participant

“Futile Cycling of Lactate Through the Plasma Membrane of Glioma Cells as Detected by 2H-13C NMR in Madrid, Spain”

July 7, 2003

ERIC YIP

BRAVO! Participant

“Comparative Studies on Colony Size and Prey Capture in Anelosimus-Ecuador”

September 3, 2003

BRAVO! DATABLITZES 2003, continued

RETSINA MEYER

BRAVO! Participant

“Morphing in the Midnight Sun”

and

CHERYL SIBLEY ALBOYLD

Graduate Programs Coordinator, Mayo Graduate School

“An Overview of the Mayo Clinic Graduate Programs Offered in Scottsdale”

September 22, 2003

MARGARETHE STRINGHAM

BRAVO! Participant

“The Molecular Epidemiology of Giardia duodenalis in Humans and Dogs”

and

SARAH DOELLE

BRAVO! Participant

“Probiotics, Potatoes, and Pivo”

and

ALICE NAVRATILOVA

BRAVO! Participant from the University of South Bohemia

“Three-Dimensional Organization of Satellite DNAs in Interphase Nuclei of Selected Vicia Species”

November 18, 2003

***EXPLORING TRANSLATIONAL RESEARCH AND MEDICINE
(ExTrReMe) SEMINARS
2003***

DR. LINDA RESTIFO

Associate Professor, Neurobiology and UBRP Faculty Sponsor

“Bridge Over Troubled Waters, The Cultural Divide Between Science and Medicine: Barriers to Translational Research?”

January 22, 2003

DR. RICH JORGENSEN

Professor, Plant Sciences and UBRP Faculty Sponsor

“Of Plants and Men: Gene Silencing”

February 26, 2003

DR. JOHN C. RACY

Professor, Psychiatry

“Humanism and Medicine in the Real World”

March 26, 2003

UBRP SEMINARS 2003

DEBORAH BLUM

Professor Journalism and Mass Communication, University of Wisconsin, Madison

“Love at Goon Park: Harry Harlow and the Science of Affection”

March 6, 2003

DR. STEPHEN E. CORNELL

Director, The Udall Center

**“Why Are Some American Indian Nations More Successful Economically Than Others?
(It May Not be What You Think)”**

April 4, 2003

DR. STUART WILLIAMS

UBRP Faculty Sponsor

“Man in a Box: Bioengineering”

June 17, 2003

MICK JENSEN

Director of Communication, Institute of Biomedical Science and Biotechnology

“Write Your Own Press Release: Communicating About Science to the Media”

July 1, 2003

DR. ELIZABETH MACNEILL

Medical Director, Pima County Health Department

“Smallpox Immunization: The Pros and Cons”

July 15, 2003

DR. LESLIE BOYER

Medical Director, Arizona Poison Drug Information Center

and

DR. GRETA BINFORD

Assistant Professor Biology, Lewis & Clark College

“The Continuum of Research into Practice: Brown Spider Venom”

July 22, 2003

UBRP SEMINARS 2003, continued

WILL SEWELL AND ROBERT SCHMITZ

PhD Students

and

DR. LESLIE TOLBERT

Graduate Selection Committee Member

“Unraveling the Mysteries of Graduate School”

July 29, 2003

DR. MICHAEL WELLS

Regents Professor Biochemistry and Molecular Biophysics

“Elements of a Scientific Poster” and “Making a Scientific Presentation”

June 24 and September 9, 2003

STEPHEN LU

UBRPer in Dr. Michael Wells' Laboratory, Biochemistry and Molecular Biophysics

“Neutral Lipid Trafficking Differentiates Niemann-Pick C (NPC) 1 from NPC2 Mutant”

and

HUNG TRAN

UBRPer in Dr. Elizabeth Willott's Laboratory, Entomology

“The Effects of Bacteria and TLCK on Hemocyte Morphology of *Manduca sexta*”
November 20, 2003

UBRP FIELD TRIPS AND SOCIAL ACTIVITIES
2003

| | |
|----------|---|
| May | Orientation Picnic |
| | BioEthics Retreat |
| | Arizona-Sonora Desert Museum Tour |
| June | Annual Saguaro Harvest with Stella Tucker, our Tohono O’odham guide |
| July | Biosphere II Tour |
| | Karchner Caverns |
| | Tumacacori National Historical Park Mission/River Ecology |
| | Colossal Cave |
| | Hike the Chiricahuas |
| | Hike Ramsey Canyon / Bird Watching |
| August | Poster Session and Closing Ceremony for NSF REU Students |
| October | Fulbright/UBRP Fall Reception |
| November | Hike Ramsey Canyon |

III.

DONORS

TO THE

UNDERGRADUATE BIOLOGY

RESEARCH PROGRAM

DONORS TO THE UNDERGRADUATE BIOLOGY RESEARCH PROGRAM 2003

Contributions to the Undergraduate Biology Research Program came from three sources this year: contributions from program alumni in response to our appeal to build an endowment; contributions through the University's annual fundraising campaign; and contributions in memory of Dr. David C. Rowe, longtime UBRP faculty sponsor and world-renowned behavior geneticist, who died February 2, 2003. List is updated through December 16, 2003.

Contributions from Alumni

| | | |
|----------------------|---------------------------|--------------------------|
| Dr. Kevin Bonine | Dr. Brenda Gardner-Cortes | Ms. Olivia Oehrle-Steele |
| Mr. Dustin Boyer | Mr. Paul Hoover | Ms. Nehal Shah |
| Mr. Sam Chia | Mr. Eric Kofed | Dr. Robert West |
| Ms. Adria Decker | Mr. Kirk McGettigan | Ms. Paula Williams |
| Ms. Margaret Flowers | Dr. Janna LaRue Mundt | |

UA Cares Campaign

Carol Bender

Contributions in Memory of Dr. David C. Rowe

| | |
|---|---------------------------------------|
| Dr. and Mrs. David Allison | Mr. and Mrs. Edward Kenney |
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| Mr. And Mrs. Phillip Austin | Drs. Yeong-Hau and Li-Wen Lai |
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| Mr. And Mrs. John Carlson | Dr. John Palmer |
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| Dr. Lee Ellis | Drs. Eric and Andrea Schindler |
| Dr. and Mrs. Robert Erickson | Dr. Justin Schmidt |
| Ms. Susan Felsenfeld | Drs. Nick and Camilla Strausfeld |
| Genentech, Inc. | Dr. Shirley Jo Taylor |
| Mr. James George Jr. | Drs. Leslie Tolbert and Paul St. John |
| Ms. Anne Gowin | Mr. and Mrs. Charles Van Norden II |
| Ms. Patricia Gross | Dr. Judith Ulreich |
| Ms. Judy Harris | Dr. Elizabeth Vierling |
| Drs. Jennifer Hall and David Mount | Ms. Virginia Vorhis |
| Drs. Martha Hawes and Hans Van Etten | Mr. and Mrs. Douglas Wylie |
| Ms. Colleen Horne | Mr. Jon and Mrs. Karen Young |
| Mr. Edvard Jorgensen | Mr. and Mrs. John Zawacki |
| Dr. and Mrs. Keisuke Kamimura | |
| Dr. Charles and Mrs. Pam Katzenberg | |
| Dr. Christina Kennedy | |

Contributions to the program can be made at any time and are deeply appreciated. Our long range goal is to build an endowment for UBRP so that future UA students will have the opportunity to learn science by doing research. Checks should be made payable to "The University of Arizona Foundation" and "UBRP Fund" should be written in the memo section of the check. Checks can be sent to the College of Science Development Office, Gould Simpson, room 1025, PO Box 210077, The University of Arizona, Tucson, AZ 85721-0077.

IV.

OUTREACH PROGRAMS

IN

BIOLOGY

THE MANDUCA PROJECT

For the past twelve years, the Department of Biochemistry has been engaged in an elementary school, educational outreach program known as “The Manduca Project.” The program was developed through the collaborative efforts of many teachers and scientists. Development was guided by the philosophy that teachers are the educational experts and scientists are resources ripe for exploitation. The Manduca Project, although originally intended as a science project on insect development, has evolved into an integrative program involving lessons in mathematics, art, science, computer technology, and the language arts. Graduate students and research associates, especially women and Hispanic scientists, routinely visit the local schools to provide information and to serve as role models. Since its inception, hundreds of children have taken part in the project. Teachers report that the children become so excited with the caterpillars and their lessons that they involve their parents in the project.

Additional information on the The Manduca Project can be found on the web: <http://www.manducaproject.com>. Elementary school teachers can obtain the knowledge and materials to conduct the project in their classrooms, including where to order *Manduca sexta* eggs and diet.

In July 2003, a week-long workshop for elementary school teachers was offered at the University, taught by TUSD teachers, Patricia Weaver, Curriculum Specialist, Mission View Elementary School, and Cecilia Valenzuela, 5th grade teacher, Davis Bilingual Elementary School. Both teachers have considerable experience in running this project and have developed a broad range of interdisciplinary approaches to the study of the *Manduca sexta* and its life cycle in the elementary curriculum. Seventeen teachers from ten elementary schools and four school districts participated. Listed below are the teachers who took the summer workshop.

2003 Manduca Project Teachers

Kathy Angelo – Lifelong Learning Academy
Brook Beam – CATTs Fellow, Khalsa Montessori School
Elvira Bustamante – Hollinger Elementary School
Victoria Carstensen – Esperanza Elementary School
April Childs – CATTs Fellow, Khalsa Montessori School
Sandy Cohen – Cragin Elementary School
Paige Confino – Roberts Elementary School
Maria Critso – Hollinger Elementary School
Maria Cruz – Hollinger Elementary School
Laurel Gonnason – Casas Christian Elementary School
Casondra Martinez – Jefferson Park Elementary School
Jackie Neumann – Roberts Elementary School
Christina Perin – Cavett Elementary School
Julie Reinhart – Doolen Middle School
Leticia Romo – CE Rose Elementary School
Linda Trejo – Hollinger Elementary School
Graciela Varela – Hollinger Elementary School

VISITING STUDENT RESEARCHERS SUMMER 2003

The Undergraduate Biology Research Program, in an effort to make the resources of the institution available to undergraduate science majors at other institutions, particularly small liberal arts colleges, offers a 12-week summer research program for non-UA students. Funding for this program comes from the National Science Foundation and the American Society for Pharmacology and Experimental Therapeutics.

Listed below are the students who were Visiting Student Researchers for the summer of 2003, with their home institutions and UA faculty sponsors.

Patrick Blake

Ohio Wesleyan University, Ohio
Dr. Joy Winzerling, Nutritional Sciences

Kelli Davis

The College of New Jersey, New Jersey
Dr. Roger Miesfeld, Biochemistry

Jennifer Leader

Washington State University, Washington
Dr. Li Wen Lai, Medicine

Janice Lopez

University of Notre Dame, Indiana
Dr. Bernard Futcher, Pharmacology

Sarah McBeth

Muskingum College, Ohio
Dr. Richard Friedman, Microbiology & Immunology

Yesenia Rojas

University of St. Thomas, Texas
Dr. Ronald Lynch, Physiology & Pharmacology

Rocco Serrao

Washington & Jefferson College, Pennsylvania
Dr. Alan Nighorn, ARL-Neurobiology

Emily Williams
Chestnut Hill College, Pennsylvania
Dr. Jesse Martinez, Radiation Oncology

SCIENCE CONNECTION

Science Connection, initiated in 1991 by UBRP participant Robert West, is an outreach program to pre-college classrooms in the Tucson metropolitan area that is in its 19th semester. The goal of Science Connection is to help undergraduates share their enthusiasm for science with children and to make the undergraduates aware of current issues in science education and teaching as a possible career choice. The main thrust of the program is for undergraduate students to visit local schools to do hands-on science activities on topics that range from astronomy through zoology. Information about the course (MCB 491) and volunteer program can be found at the Science Connection webpage <<http://student.biology.arizona.edu/sciconn/>>.

2003 Science Connection Participants

Jason Anderson
Julie Bordowitz
Belmund Catague
Andrew Chang
Nanibaa Garrison
Christopher Hammond
Stephanie Hartz
David Horner
Edlyn Eun-Young Jon
Monica Kim
Natalie Le-cong
Mitesh Patel
Cynthia Perry
Marcy Rosen
Anna Marie Sjursen
Tiffany Tang
Monica Vasquez
David Wood