

*“PROMOTING RESEARCH AND EDUCATION
IN BIOTECHNOLOGY”
CLOSING CEREMONY*

*2003 RESEARCH EXPERIENCES FOR UNDERGRADUATES PROGRAM
IN BIOTECHNOLOGY*

*COLLEGE OF AGRICULTURE, HOME ECONOMICS AND ALLIED PROGRAMS
FORT VALLEY STATE UNIVERSITY*

TUESDAY, AUGUST 5, 2003

C. W. PETTIGREW FARM AND COMMUNITY LIFE CENTER



Front from left: Wanda Silvagnoli, Stephanie Caffee, Karisna Muniz, LaShauna L. Jackson **Second Row:** Audrey M. Davis, Kaleena Pollard, Eriec B. Harris
Third Row: Shaherah Williams, Jeremy D. Middlebrooks, Randell Hunt, Bernail Fluellen



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*THE NATIONAL SCIENCE FOUNDATION
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FORT VALLEY STATE UNIVERSITY*



A Message from the President



Dear REU Program Participants:

Congratulations on completing the Research Experiences for Undergraduates (REU) in Biotechnology Program at Fort Valley State University. We are proud of the REU Program, its offerings and opportunities, its faculty and staff, and we are certainly proud of you! We are glad that you took advantage of this tremendous opportunity because it indicates that you are serious about your education, your academic success and your future.

The value of hands-on experiences cannot be overstated. Your participation in the program provided *you* with hands-on experience, an intimate look at the field of biotechnology, and an opportunity to work with some of the most outstanding faculty in the sciences within the University System of Georgia. Your participation provided us with an opportunity to meet some of the brightest rising stars that education has to offer. This was a win-win situation.

As many of you know, education is a privilege in some parts of the world. At Fort Valley State University, we believe it is your right. We are proud that you are exercising your right to continue your education either here or at another institution of higher education. We celebrate this occasion and your accomplishments with you, and we look forward to your continued success.

Sincerely,

A handwritten signature in black ink, appearing to read "Kofi Lomotey". The signature is fluid and cursive, with a large loop at the end.

Kofi Lomotey,
President

A Message from the Dean



Dear Students and Parents:

Welcome to the closing ceremony of the Research Experiences for Undergraduates (REU) in Biotechnology held at Fort Valley State University. We are proud of the opportunity we have as an 1890 Land-Grant Institution to host an REU-Site program funded by the National Science Foundation (NSF).

This program has given a cadre of the brightest and very talented undergraduates from throughout the United States opportunity to work one-on-one with mentors in their areas of interest. Conducting research and presenting the results is not an easy undertaking, but the experience for these students does come with its rewards. Four of the REU program participants will see their diligence pay off as they are nominated to receive further funding to expand and enhance their projects and for travel to present their research findings at national scientific meetings.

At Fort Valley State University, we take pride in our research faculty who delve into the unknown, seeking solutions to the challenges we face in our society. I hope that each of the undergraduates who worked with these mentors has acquired a thirst for knowledge and an enjoyment of the research experience.

To all participants, we thank you for choosing to spend eight weeks on the campus of Fort Valley State University. Just as this university has provided to you this exceptional opportunity, we trust that you will use your REU experience to build a foundation for future achievement and careers dedicated to improving our world. You are the next generation of scientists. We look forward to your discoveries with great anticipation.

Sincerely,

A handwritten signature in black ink, which appears to read "Fred Harrison, Jr.". The signature is written in a cursive style and is positioned above the printed name. A diagonal line is drawn across the signature from the top left to the bottom right.

Fred Harrison, Jr.
Dean

Our Keynote Speaker



RICHARD M. HOOD, Sr.
National Program Leader
Multicultural Alliances
U.S. Department of Agriculture, CSREES
Washington, D.C.

Mr. Richard Hood provides leadership for the 1890 Institution Capacity Building Grants Program, USDA's high priority initiative to strengthen academic and research programs in the food and agricultural sciences at the nation's historically black land-grant institutions and Tuskegee University. Hood is responsible for program administration and oversees the annual distribution of \$10 million in competitive grants.

Before joining USDA in 1991, Hood served as a grants administrator for 16 years with the National Endowment for the Humanities. Prior to government service, he was a fiscal officer with the Opportunities Industrialization Centers of America in Philadelphia, Pennsylvania. Hood serves on the USDA 1890 Task Force Executive Team and is a graduate of the ESCOP / ACOP Leadership Development Program, Class 10. During his tenure at USDA, Hood has been recognized with several awards, including the Unit Award for Distinguished Service, the Secretary's "Reinventing Government" award and numerous certificates of appreciation from CSREES.

A native of Washington, D.C., Hood received his B.S. degree in Business Administration from Phillips University and has pursued graduate study at George Washington University. Hood was selected in the fifth round of the 1971 College Player Draft by the Philadelphia 76ers of the National Basketball Association. He is also listed in Who's Who in American Colleges and Universities (1971) and Outstanding Young Men in America (1971). Hood is married to Cheryl Hood and is the proud father of Richard, Jr. and Andre Hood.

TUESDAY, AUGUST 5, 2003

**Room 102/103, C.W. Pettigrew Farm and Life Center
Fort Valley State University**

PROGRAM

Session I

**Presiding: Mr. Michael Jackson, Biology, Senior
2002 NSF REU-Site Program Participant at FVSU**

- 8:00 a.m. Welcome and Program Purpose
**Dr. Fred Harrison, Jr., Dean,
College of Agriculture, Home Economics and Allied Programs**
- 8:10 a.m. Recognition of parents and guests
- 8:20-10:30 a.m. Presentations by SRAP program participants

Session II

**Presiding: Ms. Thelma Madzima, Senior, Plant Science-Biotechnology
Scholar.**

- Presentations -

- 10:50 a.m. **Karisna Muniz**, Polytechnic University of Puerto Rico, Hato Rey, P.R.
Genetic Transformation in *Escherichia coli*: Optimization of Various Parameters
Mentors: Dr. Mahipal Singh, Kaye Knowles, Dr. Sarwan Dhir, Fort Valley State
University
- 11:00 a.m. **Stephanie Caffee**, Fort Valley State University, Fort Valley, Ga.
Growing Biotechnological Issues: Conflicts, Improvements, or Solutions for Future
Generations
Mentor: Dr. Nathaniel B. Brown, Jr., Fort Valley State University
- 11:10 a.m. **Randell D. Hunt**, Fort Valley State University, Fort Valley, Ga.
Propogating Cuttings: Selecting the Optimal Growth Medium
Mentors: Dr. Mark Latimore, Fort Valley State University
- 11:20 a.m. **Audrey Davis**, Fort Valley State University, Fort Valley, Ga.
Gene Transfer in Cherry Tomato (*Lycopersicon esculentum*) by Microprojectile
Bombardment
Mentor: Mrs. Seema Dhir, Fort Valley State University
- 11:30 a.m. **Jeremy Middlebrooks**, Sophomore, Albany State University, Albany, Ga.
Moxidectin Resistance of Gastrointestinal Nematodes (GIN) in Goats in Georgia
Mentor: Dr. Tom Terrill, Fort Valley State University
- 11:40 a.m. **Wanda Silvagnoli**, Polytechnic University of Puerto Rico, Hato Rey, P.R.
Gene Transfer in *Arundo Donax*: Using Microprojectile Bombardment
Mentors: Dr. Mahipal Singh, Kaye Knowles, Dr. Sarwan Dhir, Fort Valley State
University



- 11:50 a.m. **LaShauna L. Jackson**, Western Kentucky University, Bowling Green. Ky.
Isolation, Culture and Regeneration of Protoplast from *Stevia rebaudinia*
Mentors: Dr. Mahipal Singh, Kaye Knowles, Dr. Sarwan Dhir, Fort Valley State University
- 12:00 p.m. **Eriec Harris**, Fort Valley State University, Fort Valley, Ga.
Expression of Green Fluorescent Protein Gene Using Electroporation in *Stevia* Protoplasts
Mentors: Dr. Mahipal Singh, Kaye Knowles, Dr. Sarwan Dhir, Fort Valley State University
- 12:10 p.m. **Shaherah Williams**, Fort Valley State University, Fort Valley, Ga.
Optimization of Antibiotic Concentrations for In-Vitro Selection of Alfalfa (*Medicago sativa*)
Mentors: Kaye Knowles, Dr. Sarwan Dhir, Fort Valley State University
- 12:20 p.m. **Bernail Fluellen**, Florida A&M University, Tallahassee, Fl.
Agrobacterium Mediated Gene Transfer in Different Tomato Cultivars
Mentor: Mrs. Seema Dhir, Fort Valley State University
- 12:30 p.m. **Kaleena Pollard**, Fort Valley State University, Fort Valley, Ga.
Optimization of Parameters for *Agrobacterium* Mediated Transformation in Cherry Tomato
Mentor: Mrs. Seema Dhir, Fort Valley State University

Session III

Presiding: Dr. Fred Harrison, Dean

12:45-1:30 p.m **Lunch**
Room 102/103, Pettigrew Farm and Community Life Center

Introduction of speaker **Dr. Melvin E. Walker**
Professor, Agricultural Economics

Speaker **Mr. Richard M. Hood, Sr.**, National Program Leader
Multicultural Alliances
U.S. Department of Agriculture - CSREES
Washington, D.C.

1:30 p.m. **Dr. Kofi Lomotey**
President, Fort Valley State University

1:40 p.m. **Presentation of Certificates**

1:50 p.m. **Comments on behalf of participants/parents**

2:00 p.m. **Closing Remarks**
Dr. Sarwan Dhir, Assistant Professor
Director NSF HBCU-UP and REU-Site Program



2003 REU Program Participants



Karisna Muniz

Senior Chemistry major
Polytechnic University of Puerto Rico

"This experience is a great opportunity to continue with my future plans and gain experience in the industry. I would like to thank Dr. Dhir and group that has become my family for these past 8 weeks. I would recommend the REU program to any student that wants their dreams to become a reality."



Jeremy D. Middlebrooks

Sophomore Biology major
Albany State University

"I have become highly enlightened at the conclusion of this program that researchers are the most vital sector of defining, understanding and solving trials that pertain exclusively to biotechnological research. I sincerely encourage anyone interested in research to take advantage of this opportunity and participate in future programs at Fort Valley State University in the biotechnology program."



Randell Hunt

Junior Plant Science major
Fort Valley State University

"Through the REU program I realized that I have gained a great deal of essential skills required for good decision making. This opportunity provided me with the optimal training that focused on my best interest initially and ultimately for the advancement of my career."



Audrey M. Davis

Junior Biology major
Fort Valley State University

"REU has truly been a noteworthy experience. It has encouraged me to appreciate the nature of research. I encourage any student in the biological sciences to take advantage of this exceptional opportunity."



Kaleena Pollard

Junior Plant Science Biotechnology major
Fort Valley State University

"I would recommend any student to take advantage of this opportunity. I obtained many hands-on experiments in the biotechnology laboratory. Many things that I have learned will help me in the future to be able to pursue my career."



Wanda Silvagnoli

Junior Chemical Engineering major
Polytechnic University of Puerto Rico

"I'm thankful for the opportunity that Dr. Dhir gave me with the REU program. It was a great experience to participate in this program, because I have learned many things. I would recommend this program to any undergraduate student."



Shaherah Williams

Junior Plant Science-Biotechnology major
Fort Valley State University

"The REU program has been a great experience in enhancing my knowledge in the area of biotechnology. This program has taught me techniques in research which will be very beneficial as I pursue my future career goals."



Bernail Fluellen

Junior Biology major
Florida A & M University

"I feel very honored to have worked in the REU program in biotechnology. The more knowledge you have, the more power you will gain. This program has allowed me to gain more knowledge in the laboratory, while gaining power to succeed in the sciences and my career."



LaShauna L. Jackson

Senior Biology major
Western Kentucky University

"The REU program has given me the opportunity to learn new and innovative techniques as well as the scientific research process. I am appreciative of the time and commitment Dr. Dhir has dedicated to me this summer. I have gained more insight and knowledge as well as the motivation and inspiration to pursue my dreams."



Eriec B. Harris

Senior Biology major
Fort Valley State University

"The REU program has been a wonderful experience for me. It has increased my patience and efficiency in the lab and helped me gain confidence in my abilities. I would highly recommend this program to students looking for hands on opportunities in scientific labs."



Stephanie Caffee

Junior Biology major
Fort Valley State University

"My experience in the REU Summer Program has been an enjoyable one. I'm glad that I've gained more knowledge about biotechnology. My experience with this program will help me in the near future. I appreciate the opportunity given to me by this program."

REU Site Program in Biotechnology: Purpose and Activities

The purpose of the program is to focus primarily on encouraging and facilitating research careers, as well as assisting students with interests in other science-based careers and to appreciate the nature of research.

Eleven college juniors and seniors from all over the United States were selected competitively on the basis of their academic achievements and on their interests in biotechnology. Students worked on research projects with pre-selected mentors in genetic engineering, tissue culture and molecular genetics. Students participated actively with weekly student-faculty interaction meetings. Students also participated in invited speaker seminars, attended workshops and engaged in experiential learning through field trips to major research sites.

Distinguished speakers from major universities were invited to discuss research and career opportunities in the areas of agricultural biotechnology and medical sciences. Speakers included: Dr. Shailesh Lal, Oakland University.

During the eight-week program (June 23-Aug. 5), each student conducted an independent research project culminating in oral



presentations and written abstracts of their work. To promote continued interest in research, four students will be supported with additional research funds to extend their experiences into the following year. These nominated students will also be eligible for travel funds to present their research at

Students were taken for several educational tours and field trips to:



The Centers for Disease Control and Prevention, Atlanta; CNN Center, Atlanta; The Coca Cola Museum, Atlanta

❁ The University of Georgia, where students were welcomed by Dr. Ivery Clifton, CAES Academic Affairs; Dr. Donald McLellan, director, Human Resources and Curtis Burd, director, Graduate School. All the participants toured the Animal and Dairy Science Department (Dr. Steven Stice) and learned about goat and cow cloning from a single cell using micro manipulation. At the Plant Genomic Center (Dr. Andrew Peterson), where they learned about Genomic research and bioinformatics with Dr. Wayne Parrott, application of genetic engineering in crop improvement.



❁ University of Florida, Dr. Harry Klee and Ms. Thelma Madzima (FVSU Plant Biotech major and summer intern in Dr. Klee's lab) made a presentation on delayed ripening genes in tomatoes; Drs. Sue Late Shaw, Baocai Tan and Mrs. James C. Phillips (FVSU Biology major and summer intern in Dr. Sue's Lab) gave a demonstration on DNA isolation and micro array analysis of petal specific genes; Dr. David G. Clark gave a tour of the transgenic plants green houses, Cellular and Molecular Biology Program



❁ Coastal Plain Experimental Station, NESPAL Center, Tifton, Ga. (Dr. Peggy Ozias-Akins); and educational tours at the Tennessee Aquarium, Chattanooga, Tn, Stone Mountain State Park, Stone Mountain, Ga. and Disney's EPCOT Center, Orlando, Fl.

As part of the REU program, participants received a \$2,800 stipend; university housing; research applications and supplies; access to campus facilities such as laboratories, the library and computer services.



Fort Valley State University is the first 1890 Land-Grant institution, and second HBCU institution in the United States to sponsor the second successful NSF REU Site Program in Biotechnology. We would like to thank all of the REU participants and their families for a wonderful and exciting eight weeks.

Acknowledgments

Dr. Kofi Lomotey, President
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