

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

*2004 RESEARCH EXPERIENCES FOR UNDERGRADUATES PROGRAM
IN BIOTECHNOLOGY*

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

TUESDAY, AUGUST 3, 2004

C. W. PETTIGREW FARM AND COMMUNITY LIFE CENTER



Front from left: Janika Boatman, Michelle Collazo and Betsy Ampofo.
Second Row: Mahogany Walker and Angelica Satiago
Third Row: Tracey Troutman, Kiofa Clark, Shaherah Williams, Hussein Lecky,
and Cutreal Phillips.



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*THE NATIONAL SCIENCE FOUNDATION
(DIVISION OF BIOLOGICAL INFRASTRUCTURE)
AND
FORT VALLEY STATE UNIVERSITY*



A Message from the President



28 July 2004

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 overemphasized. 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. In either case, we stand ready to assist you in any way that we can as you move forward educationally. We celebrate this occasion and your accomplishments with you, and we look forward to your continued success as you pursue academic excellence!

Sincerely,

A handwritten signature in black ink that reads "Kofi Lomotey". The signature is written in a cursive style and is positioned above the printed name. A long, thin horizontal line extends from the end of the signature across the page.

Kofi Lomotey,
President

A Message from the Dean



Dear REU Program Participants and Parents:

Welcome to the closing ceremony of the 2004 Research Experiences for Undergraduates (REU) Program in Biotechnology and congratulations participants on completing your scientific experiments. Your summer here represents just one more of the growth experiences that you will continue to encounter. This experience represents a stage in your life where you have been given more independence and responsibility ... a time where you had to make decisions without the constant loving guidance and support of your parents, other family members and friends. And parents, this has been one more test of your love for your daughters and sons and of the values and work ethics you have taught and instilled in them. Once again congratulations, to the participants and parents, on a job well done.

The College of Agriculture, Home Economics and Allied Programs is proud to host the REU program funded by the National Science Foundation. You have worked with and been taught by a group of well qualified and dedicated scientists and teachers. Some have worked with the REU participants each year since its inception, which is an indication of their commitment to working with young people and we are extremely proud of them. We encourage you to keep in contact with your mentors; they are a resource that can help you in the future.

Your selection to participate in the REU Program is a result of your innate abilities, hard work, dedication and support by others. It is also an indication of your ability to recognize and take advantage of growth opportunities. However, your hard work and dedication don't stop here. As you continue your education, it will be necessary for you to constantly build upon your innate abilities with hard work and dedication and for you to continue to seek new and broadening opportunities. In summary, I challenge you to use this as just one more of the many steps you will take in your life long learning process.

Your God given abilities, hard work and dedication have opened up many educational enrichment opportunities for you and we greatly appreciate your selecting this program at Fort Valley State University. I encourage you to continue your formal education beyond the Bachelor's degree level, because you are special. You have the gift of digesting complex concepts and the ability to share them with others. We need you as scientists and teachers to promote continued scientist and economic growth in this country and to feed the hungry minds of our children and you will be better prepared to accomplish these goals if you continue your formal education. Regardless of your choice of a career path, we are grateful for the opportunity to have you participate in our REU Program and we wish you continued success.

Sincerely,

A handwritten signature in black ink, appearing to read "Mack C. Nelson". The signature is fluid and cursive.

Mack C. Nelson
Dean

A Message from the Program Director



Dear Parents, Colleagues, and Students:

Welcome to the closing ceremony for the Research Experience for Undergraduates (REU) in Biotechnology at Fort Valley State University. We are the first 1890 HBCU Land-Grant Institution to host an REU Site program funded by the National Science Foundation (NSF) since 2001.

The FVSU REU-Site program provides undergraduate students with a chance to participate in scientific research in university laboratories in the area of biotechnology. Students learn new biotechnology techniques and procedures which they use in developing and completing independent research projects that they will present to you today. This experience will lead these highly selected students to further participation in research and interactions with scientific professionals. Forty (40) students have participated in the REU program during the past four years. These students have presented their research in meetings of nine different professional and scientific organizations giving more than 35 oral and posters presentations. Seven of our REU participants have won individual awards for the presentation of their research. Some of today's participants will receive additional funding for continuing their projects during the academic year here at Fort Valley State University. In addition, they will also be invited to make presentations at future national scientific meetings nationally.

Sincere thanks are extended to our colleagues who have taken the time to make the effort to interact with and mentor these students. We appreciate all that they have done. Our thanks also go to the students who participated in our programs and to their parents who supported them. We wish you good luck in your future endeavors.

Sincerely,

A handwritten signature in black ink, appearing to read "Sarwan Dhir". The signature is stylized and cursive.

Sarwan Dhir
Associate Professor, Biotechnology
Director, NSF REU-Site & HBCU-UP Programs

Our Keynote Speaker



Dr. A. James Hicks
Program Director for the Louis Stokes Alliance for Minority Participation
The National Science Foundation
Arlington, VA

Dr. A. James Hicks, Program Director, Louis Stokes Alliances for Minority Participation (LSAMP), National Science Foundation (NSF), Washington DC, received his B.S. degree in biology from Tougaloo College, earned the Ph.D. in Botany at the University of Illinois-Urbana and received postdoctoral training, at the Missouri Botanical Garden, St. Louis. He acquired administrative training by attending the Institute for Educational Management for College and University Administrators, Harvard University, Cambridge, MA; the Executive Development Seminar for Senior Federal employees at the Western Management Development Center, Denver CO; the Extramural Associates Program at the National Institutes of Health in Bethesda, MD; the Lilly Foundation's Liberal Arts Program for College Administrators in Colorado, Springs, CO; and the Christian A. Johnson Foundation's Leadership Program in New York City.

Dr. Hicks has received numerous honors and awards for his achievements in science and for his efforts in promoting the advancements of underrepresented groups in science, engineering and mathematics. Most notably, in 1988 he received the White House Initiatives Faculty Award for Excellence in Science and Technology with a letter of from President Ronald Regan. In 1981 his biographical material was displayed at the Black History Exhibit at the National Agricultural Library in Beltsville, MD. He received the Director's Award for Administrative Excellence in 1998 at NSF, and the United States Department of Agriculture's Group Honor Award for Excellence for establishing a national awards program honoring outstanding teachers and research scientists at Historically Black Colleges and Universities, in 2001. A bevy of Certificates of Appreciation are in his portfolio from such groups and organizations, such as-Council of Colleges of Arts and Sciences (1997), The Extramural Associates Program/NIH, The University of Texas System-LSAMP, and South Carolina-LSAMP (1999), USDA (2001), The North Carolina Biotechnology Center, NSF, Washington-Baltimore-Hampton Roads-LSAMP (2002), Florida/Georgia-LSAMP (2003), and notably, in 2001, the Lifetime Service Award from the national project directors of the LSAMP Program.

Dr. Hicks and his wife Mrs. Pearl are the proud parents of two daughters Dr. Roselyn M. Hicks, and Ms. Renee Hicks-Mitchell, and a granddaughter, Sasha.

TUESDAY, AUGUST 3, 2004

**Room 110, C.W. Pettigrew Farm and Life Center
Fort Valley State University**

PROGRAM

Session I

Presiding: Ms. Thelma Madzima, 2004 FVSU Graduate, Plant Science-Biotechnology Scholar

- 8:00 a.m. Welcome and Program Purpose
Dr. Sarwan Dhir, Associate Professor
Director, NSF HBCU-UP and REU-Site Programs
- 8:10 a.m. Recognition of parents and guests
- 8:20-10:50 a.m. Presentations by SRAP program participants

Session II

**Presiding: Mr. Casey M. Bethel, 1999 FVSU Graduate
Ph.D. Student, Center for Applied Genetic Technology,
University of Georgia.**

- Presentations -

- 11:00 a.m. **Shaherah Williams**, Fort Valley State University, Fort Valley, Ga.
Somatic Embryogenesis and Plant Regeneration in Alfalfa.
Mentors: Kaye Knowles and Dr. Sarwan Dhir
- 11:10 a.m. **Betsy Ampofo**, Fort Valley State University, Fort Valley, Ga.
The Effect of Different Parameters on *Agrobacterium* Mediated Gene Transfer in
Cherry Tomato Cultivars.
Mentor: Mrs. Seema Dhir
- 11:20 a.m. **Janika Boatman**, Benedict College, Columbia, SC.
Genetic Transformation of *Stevia* using *Agrobacterium Tumefaciens*.
Mentor: Mrs. Seema Dhir
- 11:30 a.m. **Mahogany Walker**, Fort Valley State University, Fort Valley, Ga.
Efficient Preparation of *Stevia rebaudian* Protoplasts Suitable for Transgene
Expression Analysis.
Mentor: Dr. Sarwan Dhir
- 11:40 a.m. **Michelle Collazo**, Polytechnic University of Puerto Rico, Hato Rey, P.R.
Factors Influencing Electroporation Mediated Gene Transfer to *Stevia Rebaudinia*
Protoplasts.
Mentor: Dr. Sarwan Dhir



- 11:50 a.m. **Angelica Santiago**, Polytechnic University of Puerto Rico, Hato Rey, P.R.
Somatic Embryogenesis in *Arono donax* and Optimization of Gene Expression by Particle Bombardment.
Mentors: Kaye Knowles and Dr. Sarwan Dhir
- 12:00 p.m. **Tracey Troutman**, University of Georgia, Athens. Ga.
Genetic Transformation in *Escheriachia Coli* (Bacteria) using Green Fluorescent Protein Gene.
Mentors: Kaye Knowles and Dr. Sarwan Dhir
- 12:10 p.m. **Cutreal Phillips**, Fort Valley State University, Fort Valley, Ga.
Regeneration of Valerian Plants Via Adventitious Organogenesis From Cultured Leaf Explants.
Mentors: Kaye Knowles and Dr. Sarwan Dhir
- 12:20 p.m. **Kiofa Clark**, Fort Valley State University, Fort Valley, Ga.
Somatic Embryogenesis and Plant Regeneration from Leaf Explants and Subsequent Plant Regeneration.
Mentor: Dr. Sarwan Dhir
- 12:30 p.m. **Hussein Lecky**, Fort Valley State University, Fort Valley, Ga.
Effects of Feeding *Servicea Lespedza* Hay on Goats Infected.
Mentor: Dr. Tom Terrill

Session III Presiding: **Mrs. Angela Askew Hite**
Adminstrative Assistant
NSF HBCU-UP and REU-Site Programs

12:45-1:30 p.m. **Lunch**
Room 103/104, Pettigrew Farm and Community Life Center

Introduction of speaker **Dr. Issac J. Crumbly**
Vice President for Collaboratives and Outreach
CDEP Program Director

Speaker **Dr. A. James Hicks**
LSAMP Program Director, Division of Human Resource Development
The National Science Foundation, Arlington, VA

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 and guests**

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



2004 REU Program Participants



Betsy Ampofo

Sophomore Plant Science Biotechnology major
Fort Valley State University

"The REU program has been a great learning experience for me it has broadened my horizon in the field of biotechnology and research. I have been able to use my general knowledge about research to acquire new skills and conduct my own experiment with the aid of my mentor, Mrs. Seema Dhir. I would highly recommend this program to any interested student."



Angelica M. Santiago

Senior Chemical Engineering major
Polytechnic University of Puerto Rico

"I am thankful of the opportunity that the REU program has given me. This experience will help me in my future plans related to Biotechnology. I would like to thank Dr. Dhir, his staff and family for the support I was given these past two months. I know that this experience will benefit me in other university classes as well. It was a unique and unforgettable experience. Once again thanks."



Cutreal Phillips

Senior Biology major
Fort Valley State University

"I'm grateful for the opportunity to increase my scope of the sciences. This summer I have obtained more knowledge and lab skills that will definitely make me more competent for an professional school."



Mahogany Walker

Junior Biology major
Fort Valley State University

"As a young adult in the scientific community, I feel as though my participation in this years REU program has been beneficial. I feel as though this program is a good opportunity for any student to gain knowledge and experience."



Kiofa Clark

Junior Biology major
Fort Valley State University



"The REU program has been a challenging, yet fun experience that I would recommend to anyone in the scientific arena. Dr. Dhir and his staff have put together a program that has the ability to change the lives of every individual that participates in it."



Michelle Collazo
Junior Chemical Engineering major
Polytechnic University of Puerto Rico

“The REU program has been such a great experience for me. As a student this has helped me to expand my knowledge and learn many different techniques in research. I would like to thank my mentor, Dr. Sarwan Dhir for giving me this great opportunity.”



Shaherah Williams
Senior Plant Science-Biotechnology major
Fort Valley State University

“The REU program has been an excellent experience for utilizing techniques in research which will be beneficial for my future career goals. As an REU participant I was able to obtain optimal training that focused on my best interests for advancement in biotechnology. I would recommend this program to any student who is interested in enhancing their knowledge of biotechnology.”



Hussein Leckey
Junior Biology major
Fort Valley State 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.”



Tracey Troutman
Sophomore Biology major
University of Georgia

“Throughout the REU program, I have developed a stronger passion for laboratory science. My application of the knowledge I have acquired has given me more confidence in myself and strengthened my abilities as an undergraduate researcher.”



Janika Boatman
Junior Biology major
Benedict College



“I have been truly amazed with this great opportunity. I’ve learned so many great things, that I know I wouldn’t learn anywhere else! REU has made me appreciate the importance of research and biotechnology. This is a very unique hands-on experience and of course I recommend and encourage anyone to take advantage of this wonderful opportunity! It will truly be rewarding in the end..”

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.

Ten 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.

During the nine-week program (June 4-Aug. 3), 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 scientific meetings.

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.



❁ A three day workshop was organized by invited speaker, Dr. Sheilesh Lal, Assistant Professor, Okaland University, MI to provide intense hands-on experience to the REU program participants in the area of Plant Molecular biology and Genomics. Students learned several advanced techniques such as, gene amplification by Polymerase Chain Reaction (PCR), Genomic DNA isolation and sequencing also how to use genomic data from the gene bank.



❁ 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 nine weeks.



REU PROGRAM ACTIVITIES



REU PROGRAM ACTIVITIES



REU PROGRAM ACTIVITIES



Acknowledgments

Dr. Kofi Lomotey, President
Fort Valley State University
Fort Valley, Georgia

Dr. Mack Nelson, Dean
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and Allied Programs
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Dr. Dorothy Conteh
Vice President of Academic Affairs
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Ms. Barbara Humphrey, Budget Director
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Dr. Danielle Gray
Deputy Director, Neuroscience Center
Emory University, Atlanta Georgia

Special Thanks to: Ms. Angela Askew Hite, Administrative Assistant; Scott Prince, Project Assistant; Kaye Knowles, Research Technician; Heather Bowen, Lab Assistant; Natasha Wilson, Arrisia Sims, Nicholas Brown, Shauntrelle Chappell, Safiria Sutton, Mrs. Maude Black, Ms. Carol Wolfork, Mrs. Cindy Gambill, Ms. Marquinta Daniely, and Mr. Gale (B.K.) Lilja for their outstanding contributions to the program.

For additional information about the program, please contact:

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