

*“PROMOTING RESEARCH AND EDUCATION
IN SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS
(STEM)”*

*CLOSING CEREMONY
2004 SUMMER RESEARCH APPRENTICESHIP PROGRAM
FOR HIGH SCHOOL STUDENTS*

*FORT VALLEY STATE UNIVERSITY
A UNIT OF THE UNIVERSITY SYSTEM OF GEORGIA*

*TUESDAY, AUGUST 3, 2004
C. W. PETTIGREW FARM AND COMMUNITY LIFE CENTER*



Front from left: ArTashya Davis, Victoria Johnson, Tedrell Boyer, Kearston Barnes, Millena McGhee, Ta-Keria Bradshaw, Cabrini Lewis and Toney Lewis.

Second Row: Earl Tillman, Quentin Vinson, Diondre Palmer, Ashlee McGhee, Raymond Dickey, Beverly Brown and Cody Langston.



*SPONSORED BY
THE NATIONAL SCIENCE FOUNDATION
(HBCU-UP PROGRAM)
AND
FORT VALLEY STATE UNIVERSITY*



A Message from the President



28 July 2004

Dear SRAP Participants:

Congratulations on completing the Summer Research Apprenticeship Program at Fort Valley State University, and thank you for being our distinguished guests. We are proud of the Apprenticeship 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 and your academic success.

The value of hands-on experiences cannot be overemphasized. Your participation as an apprentice provided you with hands-on experience, an intimate look at the science, technology, engineering and math disciplines, and an introduction to our outstanding faculty at Fort Valley State University. 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.

Many of you have chosen Fort Valley State University as the place to further your education. To our first-year students - Welcome to the Wildcat family; we know you will be happy here. To our other prestigious participants, we wish you well in your academic endeavors and hope that your experience here was an enjoyable and memorable one. We stand ready to assist you in any way that we can as you move forward educationally.

To all of you - 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 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 Research Apprentices and Parents:

Welcome to the closing ceremony of the Research Apprenticeship Program and our heartiest congratulations to the apprentices on completing their 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 have 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 ethic you have taught and instilled in them. Once again congratulations, to the apprentices and parents, on a job well done.

This is the twenty-fourth year that the College of Agriculture, Home Economics and Allied Programs and its forerunners have sponsored or co-sponsored the Research Apprenticeship Program. You have worked with and been taught by a group of well qualified and dedicated scientists and teachers. Some have worked with the research apprentices each of the last twenty four years, 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 Research Apprenticeship 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, this is 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. We also offer you the opportunity to continue your education at Fort Valley State and we would be extremely proud if you accepted our invitation. We offer a demanding but caring and small campus environment for your continued optimum growth and development. Regardless of your choice of college or university, we are grateful for the opportunity to have you participate in our summer research program and we wish you continued success.

Sincerely,

A handwritten signature in black ink that reads "Mack C. Nelson". The signature is written in a cursive, flowing style.

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 and for the Summer Research Apprenticeship Program (SRAP) for high school students programs funded by the National Science Foundation (NSF) since 2001.

In the last four (4) years, fifty seven (57) students have participated in the SRAP program. Of these, 51 (90%) are currently enrolled at Fort Valley State University. In this group, twenty (20) students have been awarded NSF-STEM scholarships and the remaining 31 students have received Plant Science-Biotechnology scholarship under the USDA Capacity Building Program.

Our SRAP participants have experienced science in the classroom at the highest level. In addition, they have witnessed and experienced laboratory and field practices utilized by highly skilled scientists in the best laboratories and universities across Georgia and other states. They are involved in preparatory classes for college biology, chemistry and math. Our students have developed the skills necessary to read scientific literature, how to take and process various types of samples in the field and laboratory, and how to complete the analysis of the samples they take. They have been involved in a variety of activities designed to advance their success in any collegiate scientific environment irrespective of the institution or location. Today, our students will present to you the results of some of their successful activities. Some of these SRAP students today will be the REU participants of tomorrow at Fort Valley State University and or at other major institutions and will continue to have a passion for summer research programs like this one.

Given the continued success of the REU and SARP, sincere thanks are extended to our colleagues who have taken the time and made 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 extend to each of you good luck and best wishes in your future academic and scientific endeavors.

Sincerely,

A handwritten signature in black ink, appearing to read "Sarwan Dhir".

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.

2004 Summer Research Apprenticeship Program

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 students

- Presentations -

- 8:20 a.m. **Victoria Johnson**, Incoming Freshman, Wesleyan College, Macon, Ga.
Forensic DNA Fingerprinting
Mentors: Kaye Knowles and Dr. Sarwan Dhir
- 8:30 a.m. **Quentin Vinson**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
Comparison of Techniques for Isolation of Plant Genomic DNA
Mentors: Kaye Knowles and Dr. Sarwan Dhir
- 8:40 a.m. **Raymond Dickey**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
Application of Biotechnology in Animal Cloning
Mentors: Kaye Knowles and Dr. Sarwan Dhir
- 8:50 a.m. **Ashlee McGhee**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
Fish Protein Fingerprinting
Mentor: Dr. Curtis Borne
- 9:00 a.m. **Toney Lewis**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
Fish Protein Fingerprinting
Mentor: Dr. Curtis Borne
- 9:10 a.m. **Millena McGhee**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
Determination of Extractable and Bound Condensed Tannin Concentrations in Pigeon Pea Plant Parts.
Mentors: Dr. Tom Terrill and Nealy Evans-Moye
- 9:20 a.m. **Tederell Boyer**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
The Effects of West Nile Viruses on Human Beings in the United States.
Mentor: Mr. Gholamreza Keihany, Fort Valley State University
- 9:30 a.m. **Kearston Barnes**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
The Effect of Yeast in Application of Aesthetics of the Skin.
Mentor: Mr. Gholamreza Keihany, Fort Valley State University



- 9:40 a.m. **Diondre Palmer**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
The Influence of Two Types of Fertilizer on the Growth and Development of Tissue Cultured Day Lilies Transferred to the Greenhouse.
Mentors: Dr. Johnny Carter and Dr. Lianghong Chen
- 9:50 a.m. **Takeria Bradshaw**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
Embryonic Growth of Japanese Quail
Mentors: Dr. K.L. Arora and Dana Smith
- 10:00 a.m. **Earl Tillman**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
The Impact of Preslaughter Washing on Pathogen Reduction
Mentor: Dr. Govind Kannan
- 10:10 a.m. **Beverly Brown**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
Comparison of the Microbial Populations of Raw, Pasteurized Goat Milk and Soft Goat Cheese Stored at 4C Refrigeration Temperatures
Mentors: Dr. Isabel Blackman and Dr. Young Park
- 10:20 a.m. **ArTashya Davis**, Incoming Freshman, Gordon College, Barnesville, Ga.
Microbial Analysis: Evaluating Area Water Srouces for *E. Coli*.
Mentor: Dr. Fred McLaughlin
- 10:30 a.m. **Cabrini Lewis**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
Effects of Tillage Systems on Soil Microbial Population and Soybean Growth.
Mentor: Dr. Mark Latimore
- 10:40 a.m. **Cody Langston**, Incoming Freshman, Fort Valley State University, Fort Valley, Ga.
Utilizing GPS Systems in Environmental and Agricultural Studies.
Mentor: Dr. Mark Latimore

10:50 - 11:00 a.m. ----- **BREAK** -----

Session II 11:00 - 12:30 p.m. Presentations by REU program participants

Session III Presiding: **Mrs. Angela Askew Hite**
Administrative Assistant, 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. Isaac Crumbly**
Vice President for Collaboratives and Outreach
CDEP Program Director

Speaker **Dr. A. James Hicks**
LSAMP Program Director, Division of Human Resource Development
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/parents**

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



2004 SRAP PARTICIPANTS



Quentin Vinson
Peach County High School
Fort Valley, Ga.

Quentin is a recent graduate of Peach County High in Fort Valley, Ga. and an incoming freshman at Fort Valley State University. Quentin enrolled in the SRAP program because he wanted to gain some valuable knowledge that would help him in school this fall. He wanted to have experience working in the labs as well as get exposure to important people. He remarks that he wanted to gain friends that would be able to help him throughout his college career.



Millena McGhee
Peach County High School
Marshallville, Ga.

Millena is a recent graduate at Peach County High School. She says that she enrolled in the Summer Research Apprenticeship Program mainly because she wanted to become more familiar with the field she wants to pursue. Millena's number one goal for participating in the program was to become more heavily involved in the research side of science.



Tederell Boyer
Peach County High School
Fort Valley, GA.

Tederell is a recent graduate of Peach County High School. Tederell says that this program has given him the opportunity to excel in areas he would have otherwise not had the privilege of experiencing. He says that being a part of the program granted him exposure to seminar speakers, educational workshops and field trips. He feels that these experiences will help him to become more academically disciplined.



Ta-Keria Bradshaw
Thomson High School
Dearing, Ga.

Ta-Keria is a recent graduate from Thomson High School with plans to attend Fort Valley State University. This summer she is working with Dr. Arora, researching the life of Japanese quail.



Cody Langston
Copperas Cove High School
Copperas Cove, TX.



Cody is a recent honor graduate from Copperas Cove High School in Copperas Cove, Texas and plans on attending Fort Valley State University and majoring in Electronic Engineering. Cody says that he enrolled in the program to help him prepare mentally for his freshman year and to gain more background information on his major. Cody plans to pursue a scholarship through research and hard work.



Beverly Brown
Peach County High School
Fort Valley, Ga.

Beverly is an incoming freshman at Fort Valley State University. Beverly says that the summer program will help her to gain experience in her major. One of her major goals for the summer program was to learn some of the major fundamentals behind the research process.



Earl Tillman
Peach County High School
Fort Valley, Ga.

Earl is a recent graduate of Peach County High School and plans to attend Fort Valley State University in the Fall of 2004. Earl's goals for the summer program included becoming a better student, learning more about the biotechnology field and experiencing the opportunities given in the program. Earl says, "The program gives me the chance to interact with students from different places."



ArTashya Davis
Thomson High School
Thomson, Ga.

ArTashya is an incoming freshman at Gordon College. ArTashya's goal for the summer program was to learn a new skill to help in her upcoming college education. Her reason for enrolling in the program were to enhance her knowledge of the world, meet new people and get hands-on experience with science.



Diondre Palmer
Glynn Academy High School
St. Simons Island, Ga.

Diondre is a recent graduate of Glynn Academy High School and plans to attend Fort Valley State University in the Fall of 2004. Diondre says, "I enrolled in this program because I thought it would be a good experience before entering college." Diondre says his goal for the summer is to take this experience and use it as a tool for new discipline that he needs for school.



Victoria Johnson
Christian Fellowship Academy
Warner Robins, Ga.



Victoria is a recent graduate of Christian Fellowship Academy in Warner Robins, Ga. Victoria wanted to participate in the Summer Research Apprenticeship Program because she wanted the opportunity to work in the labs and meet other individuals that share common interests in the science fields. Victoria wanted to gain valuable research experience and increase her knowledge of chemistry and biology this summer.



Raymond Dickey
Crawford County High School
Roberta, Ga.

Steven is a recent graduate of Crawford County High in Roberta, Ga. and an incoming freshman at Fort Valley State University. Raymond plans on majoring in Biology and says that the summer program helped him make friends in his major and gave him the experience he needs to be a successful freshman at Fort Valley State University.



Kearston Barnes
Peach County High School
Fort Valley, Ga.

Kearston is a recent graduate at Peach County High School and enrolled in the summer program to get a more in depth understanding of science and research. Kearston plans on majoring in plant science and feels that the summer program here at Fort Valley State University will be very valuable in helping her understand the concepts behind science and research.



Toney Lewis
Thomson High School
Thomson, Ga.

Toney plans to attend Fort Valley State University in the fall of 2004 and major in Pre-medicine/ Biology. Toney is a second time participant in the Summer Research Apprenticeship Program and says he returned because he has a genuine interest in research and wanted to get more acquainted with college life.



Cabrini Lewis
Thomson High School
Thomson, Ga.

Cabrini is a recent graduate at Thomson High School and plans to attend Fort Valley State University. She plans to major in Business and later obtain a master's degree. A few years back she attended Oxford University in a leadership program. Cabrini says this program was important to her because she gained an in depth knowledge of new areas in scientific research and meet people who left a lasting impression on her. She feels the program also gave her a better understanding of things to come in her future education.



Ashlee McGhee
Peach County High School
Fort Valley, Ga.



Ashlee is a recent honor graduate of Peach County High School. Ashlee joined the Summer Research Apprenticeship program because she wanted to become more familiar with biotechnology and related college courses. She said that she also wanted to learn what professors are like. Ashlee's main goal for the summer program was to do the best she was capable of doing and work the hardest that she can.

Summer Research Apprenticeship Program (SRAP)

PURPOSE AND ACTIVITIES

The purpose of the program is to acquaint high school students with career opportunities and research experiences in science, technology, engineering, and mathematics (STEM). This year 15 students from across Georgia were selected based on their academic achievements. Participants were also required to have an overall GPA of at least 3.0; have an SAT score of 980; and have demonstrated strong interest for higher education at Fort Valley State University with a major in one of the STEM disciplines.

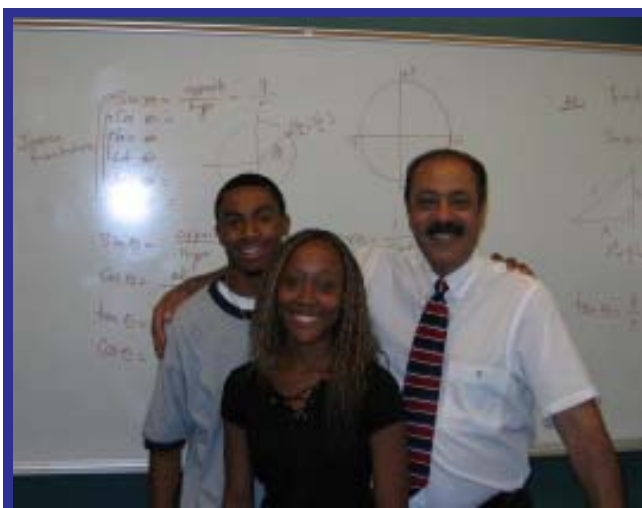


During their six-week stay on campus (June 28-Aug. 3, 2004), the apprentices received classroom instruction in pre-calculus, calculus, physics, biology, and chemistry from Mr. G. Keihany, Mr. Fred McLaughlin, Dr. Dwayne Daniels and Dr. Melinda Davis, instructors at Fort Valley State University.

The students were assigned to faculty mentors based on their research interests. Students worked with 15 mentors and carried out independent research projects in the area of biotechnology, engineering, computer science, and chemistry.

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

- ☼ 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), they learned about Genomic research and bioinformatics with Dr. Wayne Parrott, application of genetic engineering in crop improvement.



As part of the program, participants received a \$200 stipend; university housing; research materials and supplies; access to campus facilities, such as laboratories, the library and computer services.

At the end of the six-week program, each research apprenticeship student was asked to submit a research report on the project conducted in the laboratory and to make an electronic presentation of the research activities. We would like to thank all of the SRAP participants and their families for a wonderful and exciting six weeks.



Impact

The Fort Valley State University SRAP Program has been in existence for the last 17 years and has been funded by National Science Foundation HCU-UP Program for the last 4 years. During these four years, 57 students have participated of whom 51 (90%) have gone on to enroll at our institution as STEM majors. Of these enrolled at FVSU twenty has received NSF-STEM scholarships and thirty-one have received Plant-Science Biotechnology Scholarships funded by USDA Capacity Building Program.

For additional information about the program please contact:

**Dr. Sarwan Dhir, Program Director or
Center for Biotechnology
113 Alva Tabor Building
Fort Valley State University
Fort Valley, Georgia 31030-4313
Office (478) 827-1057 / 825-6887
Fax (478) 827-3027
E-mail: dhirs0@fvsu.edu**

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

SRAP PROGRAM ACTIVITIES



SRAP PROGRAM ACTIVITIES



SRAP PROGRAM ACTIVITIES



Acknowledgments

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

Dr. Mack Nelson, Dean
College of Agriculture, Home Economics,
and Allied Programs
Fort Valley State University
Fort Valley, Georgia

Dr. Dorothy Conteh
Vice President of Academic Affairs
Fort Valley State University
Fort Valley, Georgia

Ms. Barbara Humphrey, Budget Director
Fort Valley State University
Fort Valley, Georgia

Dr. E. Thomas Oliver
Vice President for Business and Finance
Fort Valley State University
Fort Valley, Georgia

Dr. Victor Santiago
Director, HBCU-UP and CREST Program
National Science Foundation
Arlington, Virginia

Mr. Wallace Keese
Vice President for Admissions and Enrollment
Fort Valley State University
Fort Valley, Georgia

Dr. Jessie DeAro
Program Assistant Director
HBCU-UP Program
National Science Foundation
Arlington, Virginia

Dr. Donald McLellan, Director
Human Resources Office
University of Georgia
Athens, Georgia

Dr. Clinton H. Dixon
Chair, Biology Department
Fort Valley State University
Fort Valley, Georgia

Dr. Julius Scipio
Dean
College of Arts and Sciences
Fort Valley State University
Fort Valley, Georgia

Dr. Isaac Crumbly
CDEP Director
Associate Vice President for
Fort Valley State University
Fort Valley, Georgia

Dr. Fred Harrison
College of Agriculture, Home
Economics, and Allied Programs
Fort Valley State University
Fort Valley, Georgia

2004 Program Mentors

Mr. Gholamreza Keihany
Dr. Melinda Davis
Dr. Curtis Borne
Mrs. Seema Dhir
Dr. Mark Latimore
Dr. Sarwan Dhir
Dr. Govind Kannan
Dr. Lianghong Chen
Ms. Kaye Knowles

Dr. Dwayne Daniels
Mr. Fred McLaughlin
Dr. Johnny Carter
Dr. Young Park
Dr. K.L. Arora
Dr. Tom Terrill
Mrs. Isabel Blackman
Ms. Dana Smith
Mrs. Nealy Evans-Moye