ABOUT FORT VALLEY STATE UNIVERSITY

Founded nearly 120 years ago, Fort Valley State University embraces a history that weaves together African-American culture, a commitment to personal and intellectual growth and a deep sense of community. What students of every era have found here is unequalled leadership across a wide scope of programs. Our status as an 1895 state land-grant university has led to remarkable innovations in agriculture and related fields. Throughout the FVSU history, our acclaimed biology and chemistry departments are responsible for sending countless students to medical and dental programs, which has produced world-renowned professionals. In addition, our comprehensive liberal arts curriculum continues to set new standards of excellence. Keeping up with technological advances, we offer top-notch online programs and the opportunity to keep abreast of FVSU’s goings-on through Facebook and Twitter. We have an excellent relationship with the city of Fort Valley and surrounding areas. Our communiversity efforts bridge the gap between town and gown. The university regularly brings the local community onto campus for special events that showcase our students’ achievements.

Acting with the combined strength of our outstanding faculty, a determined staff and a supportive community, FVSU is determined to help make their dreams come true. We may not be the largest or most expensive school in Georgia and the south, but it is a university that builds upon more than a century’s heritage of success. We reach out to every individual student to offer opportunities that spur initiative and inspire real and lasting achievement.

1005 State University Drive
Fort Valley, Georgia 31030-4313
(478) 822-6991 • www.fvsu.edu/research_day

Fort Valley State University is accredited by the Commissions on Colleges of the Southern Association of Colleges and Schools to award baccalaureate, master’s and specialist degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097 or call 404-679-4500 for questions about the accreditation of Fort Valley State University.

Fort Valley State University is an affirmative action, equal opportunity institution and does not discriminate against, applicants, students or employees on the basis of race, gender, ethnicity, national origin, sexual orientation, religion, age, disability, or marital or veteran status.

“Research is creating new knowledge.” - Neil Armstrong
Message from the President

This year’s Fifth Annual Research Day 2015 is truly a milestone in the commemoration of this exciting event. We are at Fort Valley State University know what our students are capable of accomplishing, and Research Day helps to reaffirm our beliefs in their abilities. It offers us the opportunity to witness their outstanding research on display. Indeed, it is also a proud moment for their faculty mentors, who guide them in expanding upon their intellectual curiosities.

My hope is that Research Day 2015 will energize the entire FVSU academic community, and that it will also signal to those on the outside who may be interested in becoming involved in a research environment that this is the place for them. Research is “alive and well” here at FVSU!

I invite everyone to come out and support our students, engage them in hearty discussion about their work, offer them suggestions, and encourage them so that they will know that what they are doing is appreciated and needed in our society. We hope visitors to the campus will also be inspired by what they see, and will tell others about the great things happening on our campus.

Keep on Keeping on!

Ivalaw Lloyd Griffin, Ph.D.
President, Fort Valley State University
Message from the Provost

Dr. Jessica Bailey
Provost and Vice President for Academic Affairs

It is my pleasure to welcome you to the Fifth Annual Research Day 2015. This event celebrates research activities of our students and mentorship of our faculty. Thanks to all those on the Planning Committee, who worked tirelessly to help organize this event. I applaud their efforts in extending research activities from students across many of the academic majors we offer.

As an 1890 Land Grant Institution, Fort Valley State has a rich research history. We are proud to be ranked as one of the top research institutions in the University System of Georgia. Research Day allows everyone to see how that history is being passed on to our current students, and to future students who will matriculate in this great institution. We look forward to improving our faculty among our peers by increasing the number of students involved, not only in classroom research, but also in sponsored research.

I am sure that the Fifth Annual Research Day 2015 will be as successful as the four previous years. I hope to see all those who will come and be part of a large audience presenting and listening to the great research presentations our students will be giving.

Sincerely,

Jessica Bailey, Ph.D.
Provost and Vice President for Academic Affairs
and predictive models for different systems in the cell. For regulatory networks, the components of such models are the genes that are involved in a specific system, and the transcript factors that regulate the system. Such models provide a description of the process under investigation, and the interactions that take place during the activation of the system. Predictive models should also be able to address questions about different disruption of the system. In this research, gene regulatory networks is using time-series data with noise. The Kalman filtering is employed to estimate the parameters in model. Simulation results using synthetic and noisy data show the effectiveness of the Kalman Filter.

Message from the Office of the Quality Enhancement Plan (QEP)

Dr. Ian Toppin, QEP/CTL Director
Co-Chair of Research Day 2015 Planning Committee

I am delighted to welcome you to the Fifth Annual Research Day 2015 at The Fort Valley State University. I believe I can speak on behalf of the Planning Committee in saying that the real joy from being involved with this event comes from seeing students proudly displaying their work for others to see. We expect that as in previous years, students’ oral, poster, and artistic presentations will be of the highest quality, and those who come out to enjoy this event will leave with many pleasant surprises due to the depth and breadth of research students are doing.

This year’s event is facilitated as a collaboration between the Offices of Undergraduate Research (OUR), and the Quality Enhancement Plan (QEP), which is focused on enhancing critical thinking. It represents a clear example of the impact our emphasis on critical thinking is making across multiple disciplines. And, I am delighted to see that our promotion of inquiry-based learning (research) is becoming a hallmark of students’ academic experience at FVSU.

We believe that all who participate in Research Day this year will be encouraged by what they see. On behalf of the members of the Research Day 2015 Planning Committee, I welcome you to Research Day 2015!

Best Regards,
Ian Toppin, Ed.D.
Abstract: Time series expression experiments are an increasingly popular method for studying a wide range of biological systems. Biological processes are often dynamic, thus researchers must monitor their activity at multiple time points. The most abundant source of information regarding such dynamic activity is time series gene expression data. These data are used to identify the complete set of activated genes in a biological process, to infer rates of change, order, and causal effects and to model dynamic systems in the cell. The analysis at network’s level will focus on the interactions between genes, and attempt to build descriptive

sands, even tens of thousands of uniformly or normally distributed points, large, complex equations can be estimated with a minute margin of error. Nonetheless, the Monte Carlo method cannot be practically implemented using mere pen and paper. Instead, the method has been simulated using two well known platforms: Excel and R. These platforms are both easily accessible by the average student, professor, or researcher and have been compared for their effectiveness and ease of use. To demonstrate the simulation, the Monte Carlo method was applied to single, double, and triple integrals and functional uncertainties using automated random sampling. The values were compared to analytical values given by mathematical software and showed a minute margin of error of less than 0.01 percent. With these programs, the simulation has been demonstrated both with and without the necessity of programming, therefore making it accessible to both the novice and advanced professional. This method enhances the ability to predict future outcomes, understand multiple case scenarios, and more. It is being currently being used by corporations and special analysts all over the world. With continued refinement, accuracy can be further improved using alternate calculation methods and results can be better analyzed to indicate probability of error in realistic application.

50. Hong Ha, Ai

Major: Computer Science
Status: Undergraduate Student, Senior
Presentation Type: Poster
FVSU Research Mentor: Dr. Haixin Wang
Title: Noise Analysis of Gene Regulatory Networks Using Kalman Filter
Members of Research Day 2015

Planning Committee:

Dr. Andrew Lee, Co-Chair
Dr. Ian Toppin, Co-Chair
Dr. Celia Dodd, Coordinator

Mr. Edward Boston
Dr. Shadreck Chitsonga
Dr. Sarwan Dhir
Mrs. Victoria Dubriel
Ms. Jada Harris
Dr. Linda Johnson
Dr. Nirmal Joshee
Dr. Frederick McLaughlin
Dr. Komanduri S. Murty
Dr. Teresa Shakespeare
Dr. Tenora Simoñez

Mathematics & Computer Sciences

48. Bennett, Jazmin R.
Major: Mathematics & Computer Science
Status: Undergraduate Student, Senior
Presentation Type: Poster
Research Advisor & Advisor’s Institution: Dr. Dawitt Aberra
FVSU Research Mentor: Dr. Shadreck Chitsonga
Title: Elite Student Population’s Opinion of Fort Valley State University

Abstract: Diverse Magazine’s “Top 100” lists some Fort Valley State University (FVSU) undergraduate degree programs for producing the highest number of African American graduates in the nation. A sample of 51 students from FVSU’s Cooperative Development Energy Program (CDEP), Honor’s Program and other financially supported agriculture programs at FVSU were surveyed using a questionnaire to understand why they chose FVSU and also to find out if they would choose to attend another university if given the opportunity to. The students surveyed were mostly senior level who have been at FVSU for the majority of their college career. Descriptive statistics were used to analyze the data. Results showed that scholarship awards and low tuition were the main reasons that students chose to attend Fort Valley State University. On whether students would attend another university, over half of the students surveyed indicated that they would attend another university. The research gave an overview of elite student population’s views of the Fort Valley State University.

49. Paulana Hall
Major: Mathematics and Computer Science
Status: Undergraduate Student, Junior
Presentation Type: Oral
FVSU Research Mentor: Dr. Masoud Naghedofeizi & Dr. Dawit Aberra
Title: Monte Carlo Simulation of Integrals and Uncertainties: Excel vs. R

Abstract: The Monte Carlo method, a well known yet novel idea, approximates the values of functions, integrals, uncertainties, and more using random sampling of points across a region. Using hundreds, thou-
construct their individual identities. As a cohort, Millennials are commonly known for their close relationship to digital technology, especially computers, the Internet and social media. This performance based presentation highlights their journeys and self-expression. At times these performances are funny and hysterical, and at other times, they are heart wrenching and provocative. "Take Me to the King" represents Millennials in ways that informs and interrogates characterizations of them as "narcissistic" and "entitled." According to Director Lambert-Smith, "The process of developing one’s voice and genuine identity is one of the most important rites of passage for young adults and the young actors. Many youths are consistently required to mimic, regurgitate, and limit themselves to the ideas in their everyday lives, therefore they rarely ever develop a true individual voice, which causes them to escape their destiny." "Take Me to the King" represents a Millennia's movement toward, creativity, subjectivity and agency.

47. Rivera-Brignoni, Brenda

Major: Spanish
Status: Undergraduate Student
Presentation Type: Oral
FVSU Research Mentor: Mary Barnard
Title: Brazil's Diverse Cultures

Abstract: In this talk, I will present information I gathered about Brazil’s diverse cultures during a recruitment trip taken on behalf of FVSU. I traveled across Brazil collecting cultural artifacts and testimonies from people representing different ethnic groups in the country. Brazil is best described as a melting pot of different world visions and approaches to modernity and globalization. Through this trip, I was able to promote FVSU and recruit students to our university.

Dr. Clayton currently serves as the Edmund Asa Ware Distinguished Professor and Chair of the Department of Sociology and Criminal Justice, Editor of Phylon, and Interim Director of the Center for Undergraduate Research and Creativity at Clark Atlanta University.

Dr. Clayton has taught at such institutions as Millsap College, Morehouse College, the University of Massachusetts, The Atlanta University, the University of Nebraska at Omaha, The University of Georgia, and Clark Atlanta University. He has served as The Donald L. Hollowell Distinguished Professor of Social Justice and Civil Rights Studies at the University of Georgia School of Social Work; Founding Director of the Center for Social Justice, Civil and Human Rights at The University of Georgia; Chair of the Department of Sociology and Director of Sponsored Programs at Morehouse College; Vice Provost for Research and Executive Director of the Morehouse Research Institute and Editor of Challenge: A Journal of Research on African American Men.

Dr. Clayton earned his Masters and Ph.D. degrees in Sociology from Emory University.

Funded grants for 2014 include a $100,000.00 grant from the Mellon Foundation to incorporate research into the social science curriculum; a $30,000.00 from the Carnegie Corporation for a symposium on the Shelby decision and its effect on minority voting behavior; and $24,000.00 from the Russell Sage Foundation to publish the papers from the Shelby decision. Previous funded grants include $1,000,000 grant from DHHS/Office of Minority Health for a consortium of 5 HBCU’s to address Minority Male Health in 2010 and 2006, and $900,000 in both 2008 and 2009 for the same. Recurring funding in the amount of $570,000 received from the Administration for Children and Families/DHHS to develop methodologies to strengthen families for 2006-2009. In 2007, as a member of the University of Maryland’s Center of Excellence on Terrorism and Responses to Terrorism (START), Dr. Clayton, with a grant of $75,000, conducted research on inmates as potential recruits for terrorist organizations. In the same year he received $170,000 Conference Grant from the Carnegie Corporation to host an invitational roundtable on males in higher education.
Joni Dubriel Harris
FVSU Alumni

Joni Dubriel Harris is a 2001 graduate of Fort Valley State University. After receiving her B.A. in Mass Communications with a concentration in Public Relations, she attended Georgia State University where she earned a Master of Arts in Communications. While attending graduate school, she served as a research assistant and Human Communication instructor. During the years of 2006-2008 she returned to FVSU where she served as an assistant professor in the Mass Communications Department. She most enjoyed teaching public speaking and public relations courses.

Mrs. Harris has always had a passion for luxury fashion and beauty and began working part-time in this industry at the age of 18. She worked as a retail specialist for P&G Prestige where she served as an ambassador for premier brands such as Dolce and Gabbana, Lacoste, Burberry, Hugo Boss, Yves Saint Laurent and Gucci. She worked with this company until 2008 and received numerous accolades and awards for leading sales, both regionally and nationally. Upon leaving P&G, she began a career with the luxury retailer Neiman Marcus, where she was a business manager for Clive Christian Perfume (creators of the world's most expensive perfume) and the Japanese beauty brand Clé de Peau Beaute. It was at Neiman Marcus that she gained experience in event planning for the beauty department, its vendors and many of their most elite clients. As an enhancement to her career she has and continues to travel extensively in the United States, as well as to countries in Europe, the Caribbean and North Africa among others.

In August of 2014, Mrs. Harris was offered the position where she currently serves as Director of Public Relations & Social Media for the fashion, beauty and lifestyle blog, The Lady Loves Couture, founded by Marjorie Harvey. Mrs. Harris resides in Atlanta with her husband Dr. A. Lehman Harris and they are expecting their first child this summer.

Protecting Consumer Privacy: An Inside Look at the Harsh Realities of Online Browsing

Abstract: The objective of this research paper is to examine and educate online users on the importance of understanding how their personal information is being used for purposes other than their initial intentions. Online servers do not inform users of the protection or lack of protection of consented information released to the webpage. The lack of protection would lead to other online servers having the ability to access the user's information for marketing advertisements and promotional purposes. Another objective of this research is to increase the knowledge of online users to become aware of how easy it is for a company server to use and trade clients’ information, and not allow them to access or correct the information.

In order for the writer to complete research for this paper, data was collected using both the qualitative and quantitative methods. Gathering information for qualitative research involves collecting research with content that helps to solve problems from different angles with quality information. Quantitative research allows the incorporation of quantifiable information time series trends related to protection if consumer information.

The study findings supported the hypothesis that companies and third party sources cannot operate without anonymity. This research findings will be shared with interested law firms, especially those practicing corporate ethics law.

46. Pittman, Josean
Major: Criminal Justice
Status: Undergraduate Student, Senior
Presentation Type: Artistic
FVSU Research Mentor: Dr. Maisha Akbar, Ph.D.
Title: “Take Me to the King: A ‘Selfie’ on Performance, Media and Identity”

Abstract: “Take Me to the King” is a solo performance, or a "solo media act" that is an outgrowth of a series of acting/writing workshops conducted by Jade Lambert-Smith, Fort Valley State University’s Joseph Adkins Players student drama group. This presentation, in part, explores how a “Millennial,” a member of a generation born between the early 1980s and the mid-1990s, uses social media and cultural performance to
44. Favors, Kiarrica

**Major:** Criminal Justice

**Status:** Undergraduate Student, Sophmore

**Presentation Type:** Artistic

**FVSU Research Mentor:** Dr. Maisha Akbar, Ph.D.

**Title:** “Back to the Middle: A ‘Selfie’ on Performance, Media and Identity

**Abstract:** “Back to the Middle” is a solo performance, or a "solo media act" that is an outgrowth of a series of acting/writing workshops conducted by Jade Lambert-Smith, Fort Valley State University’s Joseph Adkins Players student drama group. This presentation, in part, explores how a “Millennial,” a member of a generation born between the early 1980s and the mid-1990s, uses social media and cultural performance to construct their individual identities. As a cohort, Millennials are commonly known for their close relationship to digital technology, especially computers, the Internet, and social media. This performance based presentation highlights their journeys and self-expression. At times, these performances are funny and hysterical, and at other times, they are heart wrenching and provocative. “Back to the Middle” represents Millennial in ways that informs and interrogates characterizations of them as “narcissistic” and “entitled.” According to Director Lambert-Smith, “The process of developing one’s voice and genuine identity is one of the most important rites of passage for young adults and the young actors. Many youths are consistently required to mimic, regurgitate, and limit themselves to the ideas in their everyday lives, therefore they rarely ever develop a true individual voice, which causes them to escape their destiny.” “Back to the Middle” represents a Millennia’s movement toward creativity, subjectivity and agency.

45. Head, Taylor

**Major:** Mass Communications

**Status:** Undergraduate Student

**Presentation Type:** Oral

**FVSU Research Mentor:** Dr. Andrew Lee

Ms. Karen Abrams has had a multifaceted technical and Entrepreneurial Management career with a track record of innovation and success. After graduating from Howard University with a BBA degree in Business Administration and California State University at San Francisco with an MBA degree in Marketing, Ms. Abrams began a career with MindSpring Enterprises Inc. and quickly became an innovative IT Management Executive with an outstanding background leading multiple cross-functional departments and project teams concurrently. She is skilled at designing and deploying cutting-edge IT solutions. She has a track record of building a business from the ground-up, managing, and restructuring nationwide voice/data networks and she possesses strong technical and leadership skills, with proven experience managing both technical and non-technical teams. She ended her career with MindSpring Enterprises in November 2007 as Director of Operations responsible for Network Fraud and Abuse, Applications development, Project Management, and IT Risk Management.

In 2006, Ms. Abrams founded a start-up Party Rentals company and later founded a community Math, Science and Technology project in Decatur, GA, serving over 50 children with a Math, Science & Robotics Saturday School program.

Ms. Abrams possesses exceptional budgeting, negotiation, cost reduction and financial management skills. She is a self-starter who is able to communicate effectively with all levels of management, vendors, and business partners. She is also skilled in a wide array of Internet, Network and Telecom technologies, Marketing, Public Relations, Social Media and Entrepreneurial functional areas with proven talent for quickly acquiring expertise in new systems.

Currently Karen Abrams is the Executive Director of Human Equity Ratings Organization, Inc, a non-profit entity responsible for researching and generating ratings on the diverse experiences of underrepresented students in US high schools, colleges, universities and other learning environments.

Ms. Abrams lives in Lithonia, GA with her husband and 4 children.
HIV/AIDS and is least likely to receive them through any other channel. Studies have shown that most people who are imprisoned come from marginalized communities with limited access to health, education, and/or other sources of welfare. Their interaction with the criminal justice system is the most extensive exposure of public services. Without appropriate responses to HIV/AIDS in prison, the potential consequence will be a leading problem for prisoners and the communities for which they may reside.

HIV has become an increasingly important matter for the American Correction System. Effectively addressing HIV/AIDS in prisons requires counseling, testing, education, and treatment. We hypothesized that the Macon State Prison would have a plan of action to deal with HIV inmates. An authorized review of records and confidential interview of the clinician following hippo guidelines of inmates were conducted. Providing clinical diagnostic tests for inmates can help to decrease spreading the HIV to one another or the society upon release from prison. Our results indicated that the Macon County Prison system had an adequate plan in place to help prevent the spread of HIV in the prison population. Without adequate protection and treatment, inmates and our society will continue to suffer from the overwhelming effects of this epidemic.
42. Sutton, Herbert

Major: Biology  
Status: Undergraduate Student, Senior  
Presentation Type: Oral
FVSU Research Mentor: Dr. George Mbata  
Title: Comparative progeny production in Habrobracon hebetor parasitizing diapausing and non diapausing Plodia Interpunctella

Abstract: This research is focused on looking into the reproduction of hebetor wasps as they parasitize Indianmeal moth larvae. This experiment is important for the future of pest control. Using biological methods can prove to be much safer than pesticides. When doing this experiment the results are expected to follow the same pattern but variations do occur due to human error, infertility among the wasps or defense mechanisms used by the larvae. Our hypothesis was The Indianmeal Moth larvae, whether diapausing or non-diapausing will not affect the offspring production of the H. hebetor, and with that diapause will not affect the parasitizing of the Imm so the population will be controlled. Methods included extracting both the hebetor from its population and the larvae from their population and exposing them to one another for several days by sealing them together in jars and placing them an incubator. Our results showed that the hebetor was producing offspring in diapausing and non diapaus ing larvae, some larvae reached adulthood but many did not. Our results proved our hypothesis to be correct because progeny production was not affected by diapause and the population was controlled. As stated before this research is the future of pest control. It could lead to many toxins being taken off the market and subsequently taken out of the air. That would vastly improve health conditions and could even slow down global warming as well as issues with the ozone layer with those toxins gone from the air.

43. Williams, Kanesha

Major: Biology  
Status: Undergraduate Student  
Presentation Type: Oral
FVSU Research Mentor: Dr. Frederick McLaughlin  
Title: HIV/AIDS transmission in prisons

Abstract: In prison systems across North America, the spread of Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome Disease (AIDS) has become quite the challenge to control. Prisons are an intervention opportunity to reach a segment of the population, which most likely need some kind of government services related to
Research Day 2015 Presentations

Poster Presentations

Undergraduate

- Baker, Kiara
- Beaty, Brandon
- Bennett, Jazmin R.
- Canady, Kendra
- Childs, Ashley
- Hong Ha Ai
- Ivey, Frank
- Jackson, Carissa
- Laney, Dominique
- Mitchell, Ceola
- Pryor, Latisha

Graduate

- Birmingham, Sierra C.
- Brown, India
- Futch, Michael
- Graham, Charlotte
- Hill, Laura
- Holloman, Bryan
- Imoyera, Peter
- McCrary, Charnele

Andrew, Bryan

- McKinney, Moniece
- Norris, Ashley
- Paudel, Rajesh
- Smalling, Justice
- Smith, Derrick
- Wilcher, Jarvis

ble micropropagation and plant transformation system.

41. Simon, Erin

Major: Biology
Status: Undergraduate Student, Senior
Presentation Type: Poster
FVSU Research Mentor: Dr. Celia Dodd
Title: Developmental Neurotoxicity of Polybrominated Diphenyl Ether-47 in Caenorhabditis elegans

Abstract: Polybrominated Diphenyl Ethers (PBDE’s) have been used as flame retardants and can be found in many household materials; however, recent concern over their use has mounted due to their persistence in the environment and resistance to biological degradation. Contamination of the air through dust particles has caused children ages (2-7) to have the highest levels of PBDE’s in their blood. Epidemiological evidence suggests children with higher blood concentration of PBDE’s score lower on cognitive tests and are more likely to display hyperactive behaviors. In this study we utilized Caenorhabditis elegans (C. elegans) to assess the toxicity of PBDE-47 on the developing nervous system. C. elegans are a useful model organism because they have so few neurons, the majority of which are encapsulated in the nerve ring, and a short developmental life cycle. Utilizing the NW-1229, a strain that expresses green fluorescent protein in every neuron, changes in the development of the nerve ring can be assessed using fluorescent microscopy. Eggs and developing stage larvae (L1) were chronically exposed to PBDE-47 (.015, .031, .625, 1.25, .5 and 5µM) followed by assessment of the area and GFP expression in the nerve ring compared to control. Alteration of sensory behavior was assessed using thermotaxis. Results revealed no significant changes in GFP expression with PBDE treatment; however, there was a significant concentration dependent reduction in the nerve ring area. Treatment with PBDE-47 also caused atypical thermotaxis behavior. Results suggest that treatment with PBDE-47 can alter the development of the central nervous system.
process could affect the microbial population by becoming more resistant to the antibiotic, giving them another day to live.

40. Russell, Kelli

**Major:** Public Health  
**Status:** Undergraduate Student, Senior  
**Presentation Type:** Poster  
**Research Advisor & Advisors Institution:** Andrew G. McCubbin and Benjamin A. Burrows, Molecular Plant Science Department, Washington State University, Pullman, WA  
**FVSU Research Mentor:** Dr. Sarwan Dhir  
**Title:** High Frequency Plant Regeneration from Axillary Shoot in Moringa oleifera

**Abstract:** The present study was aimed to establish an efficient and rapid protocol for in vitro plant propagation of Moringa oleifera through axillary shoot explants. Axillary shoot growth was induced by supplementing Murashige and Skoog’s (MS) medium with cytokinins. Of the three cytokinins tested, namely benzylaminopurine (BAP), kinetin (KN), and thidiazuron (TDZ), BAP at 0.5 mg/l showed a maximum of 92% of shoot proliferation with 15.2±0.87 number of shoots per explant with 2.26±0.05 cm mean height of individual shoots after 4 weeks. The combination of BAP (0.5 mg/l) and NAA (0.5 mg/l) showed 95% of shooting response with 17.4±0.36 number of shoots per explant with 3.62±0.03 cm mean height of individual shoots. The combination of BAP (0.5 mg/l) and IAA (0.1 mg/l) produced 71% of shooting response with 7.4±0.46 number of shoots per explants with a mean shoot height of 1.50±0.2 cm. IAA in a concentration of 0.5 mg/l recorded 92% of rooting response with a maximum number of 15.0±0.89 root hairs in a mean root length of 8.3±0.23 cm. NAA in a concentration of 0.1 mg/l responded 93% of root formation with 14.6±1.19 number of roots per explants with a mean root length of 11.1±0.38 cm. The rooted plants were transferred to soil and vermiculure in the ratio of 1:1 and were kept in the humidity chamber for acclimatization. Fast growing embryogenic callus were also established from leaf segments of in vitro raised plants on MS medium supplemented with 4.52 uM 2,4-D and 11.09 uM BAP. The continuous production of Moringa regenerated plants via somatic embryogenesis could be used as a possi-

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**Research Day 2015 Presentations**

**Oral Presentations**

**Undergraduate**

- Baker, Garrette  
- Ceocal, Yasmin  
- Chaney, Alana  
- Culver, Rashaad  
- Cunningham, Kristena  
- Davis, Breon  
- Finley, Nicholas  
- Fuller, Cameron  
- Leonard, Tanisha  
- Levatte, Tareka  
- Hall, Paulana  
- Head, Taylor  
- Jones, Brenna  
- Martin, Anna  
- Riley, Shaquile  
- Rivera-Brignoni, Brenda  
- Ruff, Jasmine  
- Stallings, Randi  
- Sutton, Herbert  
- Williams, Kanesha

**Graduate**

- Degala, Hema  
- Ekefre, Daniel  
- Scott, Jasmine

**Artistic Presentations**

- Favors, Kiarrica  
- Pittman, Josean
Agriculture

1. Birmingham, Sierra C.

Major: Plant Biotechnology
Status: Graduate Student
Presentation Type: Poster
FVSU Research Mentor: Dr. Bipul K. Biswas
Title: Stevia: Sweet Leaf, Sweet Life.

Abstract: Stevia [Stevia rebaudiana Bertoni] native to Paraguay, South America. It is a member of the Asteraceae family, a tropical shrub perennial and has medicinal properties. It is also used as a sugar substitute for diabetics and hypertension patients. Stevia is continuously becoming economically significant and more profitable as research continues to evolve. The purpose of this research is to determine a technique that increases the yield of stevia to develop gainful returns for U.S. farmers. In this investigation we have been selecting high yielding stevia germplasm, developing biotechnology tools to propagate selected high yielding stevia germplasm, acclimation of in vitro raised stevia plants into the green house to plant them for intercropping. Intercropping of stevia in peach orchards are ongoing. This research finding will give farmers a great understanding of how stevia will increase profitability and also obtaining high yields.

2. Brown, India

Major: Biotechnology
Status: Graduate Student
Presentation Type: Poster
FVSU Research Mentor: Dr. Bipul Biswas
Title: Investigating Seed Germination and Micropropagation of Stevia rebaudiana Bertoni

Abstract: Stevia (Stevia rebaudiana Bertoni) is a perennial plant native to Paraguay. It contains two main sweetening compounds; stevioside and rebaudioside. Stevioside has a bitter aftertaste and Rebaudioside lacks bitter aftertaste. Stevia is a zero calorie sweetener with compounds that are 300 times sweeter than sugar. It is hypoglycemic and hypotensive.

Big Indian creek gave us a reading of 1.5 ppm. Iron levels are closely related to pH. Water pH levels were typically 7 at each location except for Big Indian creek which had a pH of 6.8. This difference can be linked to photosynthesis and respiration, calcium carbonate, soil decomposition, plant growth, carbon dioxide, acid rain, water temperature and soil pH. Soluble iron in water is found only when the pH is acidic, the low dissolved oxygen (DO) levels and/or redox potentials of 0.3-0.2 V. Carbon dioxide levels were very unpredictable giving us readings ranging from 1.6ppm to 28ppm. Big Indian creek carbon dioxide levels were 26 pppm. An increase in carbon dioxide results in increased acidity. The DO level at Big Indian Creek was 9.8 ppm. The dissolved levels ranged from 5 ppm to 15 ppm. Dissolved oxygen levels were high enough at all sites so that these bodies of water can sustain fish.

39. Ruff, Jasmine

Major: Biology
Status: Undergraduate Student, Senior
Presentation Type: Oral
FVSU Research Mentor: Dr. Frederick McLaughlin
Title: The effects of kaolin against anti-microbial agents and an evaluation of the GI tract motility via examination of C.elegans

Abstract: Kaolin is a type of clay found in nature. It can also be made in a laboratory. Kaolin is used for mild-to-moderate diarrhea, severe diarrhea (dysentery), and cholera. Kaolin is also used in laboratory tests that help to diagnose disease. In manufacturing, kaolin is used in tablet preparation and to filter materials and remove color. Studies have shown that various antibiotics lose its potency in the presence of kaolin. Studies have also shown that the presence of kaolin decreases the motility of the GI tract of protozoan. During my research, we performed experiments to examine the effect of kaolin against anti-microbial agents and the motility of C.elegans. During the first experiment, we performed tests using different anti-microbial agents such as Staphylococcus and Streptococcus as well as various antibiotics. After preparing the kaolin medium, we streaked out the anti-microbial agents onto the plates and placed various antibiotic disks onto the plates as well. During the second experiment, we performed experiments using C.elegans. The purpose was to evaluate the motility of them in the kaolin medium. We placed C.elegans into a kaolin/motility medium and observed the motility of it. For the first experiment it was hypothesized that various antibiotics will lose its potency in the presence of kaolin. For the second experiment, it was hypothesized that kaolin would decrease the motility of the GI tract. The long term effect of this
Abstract: The Nuclear Regulatory Commission (NRC) strives to keep radiation exposure as low as reasonably achievable (ALARA) for United States citizens. The NRC has radiation protection software to ensure hospitals are keeping exposure rates low. This research focused on assessing the accuracy of beta dosimetry software distributed by the NRC. The NRC uses VarSkin 5.0 (Pacific Northwest National Laboratory), a software package used to estimate ionizing radiation dose to layers of the skin resulting from hot particle exposure. When comparing the samples from VarSkin 5.0, VarSkin 4.0, and Duke Universities’ Beta Dosimetry Calculator, the same amount of absorbed doses are expected. Since variation can occur depending on time, distance, and shielding, this study was conducted running multiple beta dose calculators, with the radionuclide Fluorine 18 while varying the exposure time and cover density to assess the efficiency of VarSkin 5.0 versus older dosimetry programs. Our hypothesis was that VarSkin 5.0 would account for the real absorbed dose and produce the most precise results. Although all the programs were below regulatory limits (NUREG 20.1201), VarSkin 5.0 radiation levels benchmarked against VarSkin 4.0 and Duke University’s Calculator. We concluded VarSkin 5 has a better account for electron energy loss than VarSkin 4 due to a more detailed backscatter model. The changes in equations used accounted for the radiation decrease. Also, unknown factors, such as geometry and skin averaging area may have skewed our results. Knowledge from this research will be useful in providing general background data for the use of quantitating radiation exposures.

38. Riley, Shaquile

Major: Biology
Status: Undergraduate Student, Senior
Presentation Type: Oral
FVSU Research Mentor: Dr. Melinda Davis
Title: Water analysis of iron, pH, carbon dioxide and dissolved oxygen in Middle Georgia bodies of water

Abstract: Water and soil analyses were done on samples from 8 locations around Fort Valley, in middle Georgia. LaMotte and Ward’s test kits were used to analyze the water and soil. This presentation discusses the differences in dissolved oxygen (DO), carbon dioxide, iron and water pH. At every location the iron levels were found to be <1 ppm except for one.
sorghum compared to other biofuel feedstock is also covered.

4. Holloman, Bryan

Major: Plant Biotechnology
Status: Graduate Student
Presentation Type: Poster
FVSU Research Mentor: Dr. Hari P. Singh
Title: The Effect of Different Explants and Plant Growth Regulators on In-vitro Callus Induction and Plant Regeneration of Giant Miscanthus

Abstract: Giant Miscanthus (Miscanthus x giganteus) is a perennial C4 grass from family Poaceae which is efficient in converting sunlight to biomass with limited water availability and at high temperatures. It has gained much attention as feedstock for cellulosic ethanol due to its ability to grow on marginal land and being sterile and classified as non-invasive grass species. Since Miscanthus is propagated by rhizomes it is hard to meet the growing demand from farmers. Micro propagation of Miscanthus using different tissue culture methods have been reported in the literature but an optimized protocol has yet to be established. A successful micro propagation protocol will help speed up regeneration cycle, reduce cost, produce high volume, less cumbersome, and will require less space. The proposed research is aimed to produce an efficient in-vitro propagation protocol by using growth regulators alone (1.5, 2.0, 2.5 and 3.0 mg/l 2,4-D and 0.25, 0.50 and 1.0 mg/l BAP), or in combination with, other organic sources (sucrose, maltose, glucose, fructose and mannose) using inflorescence, leaf, stem and rhizome as explants. The results from this research will be able to provide suitable recommendations on type of explant and specific treatment of growth regulator and organic sources for efficient callus induction and rapid plant regeneration for Giant Miscanthus.

5. Imoyera, Peter

Major: Public Health
Status: Graduate Student
Presentation Type: Poster
FVSU Research Mentor: Dr. Clarence E. Riley, Jr.

51tors that trigger asthma in low-income areas in Fort Valley, GA. The recommendations from this study may be used to provide public health workers and medical personnel information on how to educate African-Americans in low-income housing about environmental factors that trigger asthma.

36. Mitchell, Ceola

Major: Biology
Status: Undergraduate Student
Presentation Type: Poster
FVSU Research Mentor: Tiffani Holmes and Babatunde Ojo
Title: Computational Study of Ether Substituted Methylphenidate Derivatives

Abstract: The current study proposes a new class of compounds where methylphenidate is modified by the addition of an ether group to its piperidine nucleus (C1*). Methylphenidate is characterized by two chiral carbons, one which of which is substituted by H, a phenyl ring, an ester, alcohol, or ether group, and piperidine nucleus (C1*). The second chiral carbon (C2*) is located on the piperidine ring with substitution possible at the amino nitrogen. All compounds were modeled using Density Functional Theory’s M06-2X method with a 6-311++G(dp) basis set and molecular descriptors were found. Results revealed significant changes in dipole moment when comparing the modeled compounds to the parent methylphenidate structure. Additionally, the presented work will include the addition of halogens to the phenyl moiety because halogenated methylphenidate has been shown to exhibit more biological activity. Some methylphenidate derivatives have exhibited anti-Alzheimer properties while others are cocaine antagonists. The results of this study will lead to the tuning and synthesis of a new set of compounds with desired medical properties.

37. Pryor, Latisha

Major: Biology
Status: Undergraduate Student, Senior
Presentation Type: Poster
Research Advisor & Advisors Institution: Rebecca Tadesse, USNRC
FVSU Research Mentor: Dr. Celia Dodd
Title: An Analysis of Varskin 5.0
that might foster evolution of subtelomeric genes. We used the yeast *Kluyveromyces lactis* that contained a URA3 gene inserted into a subtelomeric region to measure homologous recombination near telomeres. These cells were exposed to different stresses including salt and arsenate, and then diluted and plated onto 5-FOA to select for recombination events deleting URA3. We found that both 1 M NaCl and 0.5 mM sodium arsenate led to elevated rates of subtelomeric recombination. During these experiments we also noticed that the arsenate-exposed *K. lactis* were converted at very high frequency (> 50%) to two other cell types with discretely slower growth rates. These slow growing forms were metastable, sectoring back at high frequency to the normal fast-growing form.

35. Martin, Anna

**Major:** Biology

**Status:** Undergraduate Student, Senior

**Presentation Type:** Oral

**FVSU Research Mentor:** Dr. Frederick McLaughlin

**Title:** The environmental factors that triggers asthma in African-Americans children in low income communities.

**Abstract:** Asthma is a leading chronic disease affecting children. According to the Center for Disease Control (CDC, 2011), 6.8 million children is affected with asthma in the United States. Researchers have determined asthma cannot be cured, but it can be managed by avoiding environmental triggers. Environmental triggers can include: second-hand tobacco smoke, dust mites, mold, and pets with fur. The regular use of medication can control the asthma triggers.

In recent years it is believed that the number of African-American children in the United States diagnosed with asthma has increased intensely. According to a recent study published in *National Medical Association* researchers at John Hopkins University determined, African-American children were three to four times more likely than Caucasians to be hospitalized for asthma, and were four to six times more likely to die from this disease. They are also less likely to receive treatment than Caucasians.

This study focused on the relationship between urban quality, indoor allergens, and health disparities as they relate to Asthma within African-American families living in the United States. Through face-to-face interviews, and the collection of mold growth with the correlation of relative humidity the author will examine the respiratory illnesses of African-American children with Asthma and the care they receive. The findings of this study may provide significant information about environmental fac-

6. McCrary, Charnele

**Major:** Biotechnology

**Status:** Graduate Student

**Presentation Type:** Poster

**FVSU Research Mentor:** Dr. Bipul K. Biswas

**Title:** Developing Biotechnological Process Towards Managing Peach Tree Short Life

**Abstract:** The peach *Prunus persica* (L.) Batsch] is the renowned crop in Georgia (known as the Peach state). Peach tree short life (PTSL), in which ring nematode, cold injury, and bacterial canker combine to kill the scion in the spring or winter. A good, reliable rootstock is important in tree survival and growth. Trees on Guardian rootstock have passed field tests to tolerate and survive better than other rootstocks against ring nematode but not 100% resistant to nematode. This disease has affected peach culture in local peach farmers for decades, accounts for millions of dollars of losses annually. Research has been conducted on, Early Redhaven - Halford, Redglobe - Guardian, Cresthaven - Halford, and Early Augustprince - Guardian. In this investigation, in vitro study has been initiated and the study of morphological changes in the apex during floral transition and bud growth was evaluated and will be presented.
7. McKinney, Moniece

**Major:** Plant Science/Biotechnology  
**Status:** Graduate Student  
**Presentation Type:** Poster  
**FVSU Research Mentor:** Dr. Bipul K. Biswas, FVSU  
**Title:** *Sweet Fruit of Summer: Morphogenic Responses of Local Peach (Prunus persica) Varieties and Rootstocks*

**Abstract:** Peach *Prunus persica*, one of the most consumed fruits in the world has numerous health promoting bioactive compounds, vitamins and minerals. The leaves, seeds and bark of peach can be used for medicinal and nutritional purposes. To improve and develop better quality peach varieties we need to utilize plant biotechnology techniques. Plant biotechnology techniques utilizing tissues from woody fruit trees have had little success due to its recalcitrant nature. Contaminates in woody tree cultures like peach is very difficult to eradicate, which has been reported in many woody plant species. The aim of this study was to develop a method to control contaminants in peach cultures, which is prerequisite for in vitro study. This investigation was carried out to investigate the efficiency of explant sterilization, plant growth regulators and different media on explant establishment. Various explants were retrieved from FVSU High Density Peach Orchard and sterilized with mercuric chloride, ethanol and fungicide. Sterilized explants were inoculated in media supplemented with various concentrations of plant growth regulators. The explants were treated with 0.01, 0.05, 0.1, 0.5 & 1.0 % (w/v) mercuric chloride for 0-25 minutes and 5, 10, 15 & 20% Sodium Hypochlorite for 0-25 minutes. The highest percent survival was observed in cultures sterilized in 0.5 % mercuric chloride for 20 minutes. The best medium for bud break in peach was BAP, Ad.S. and Kinetin on Woody Plant Medium (WPM). Rooting was

8. Norris, Ashley

**Major:** Public Health  
**Status:** Graduate Student  
**Presentation Type:** Poster  
**FVSU Research Mentor:** Dr. Sarwan Dhir  
**Title:** *High Frequency Plant Regeneration from Axillary Shoot in Moringa oleifera*

**Abstract:** Water and soil samples were collected from eight local bodies of water around Fort Valley, GA to determine their health. Nitrogen and phosphorus are important plant nutrients required by phytoplankton as well as land plants. Soil nutrients directly affect water nutrients. The soil was collected using a trowel. The water samples were collected using a water sampling bottle or bucket. The soil and water samples were analyzed using LaMotte kits and Ward kits. Soil nitrogen results varied from trace to 100 lbs/A. Soil phosphorus ranged from less than 10 lbs/A to 150 lbs/A. A number of factors may have contributed to this variation from proximity to fertilized fields in some locations to student error. All eight bodies of water had ammonia in water readings of less than 1.0 ppm. Nitrate in water ranged from less than 0.4 ppm to greater than 3 ppm which was the maximum the kit could measure. Nitrite in water ranged from 0 ppm to less than 0.4 ppm. Overall these eight sites are healthy and supported aquatic life. As with most bodies of water, the concentration of phosphorus was usually sufficiently low in fresh water so that algae growth was limited. Phosphate in water results varied from less than 0.2 ppm to greater than 1 ppm (maximum the kit could measure). High levels of phosphorus and increased algal growth can reduce water clarity. The maximum level of phosphorus found at Bay Creek may have been the result of fertilizer run-off or upstream land use practices from the Blue Bird manufacturing facility. The natural level of ammonia or nitrate is typically low (less than 1ppm). Ammonia in water is an indication of organic waste decomposition. Based on this study there is no indication of organic waste contamination in local waters. Nitrate in excess amounts cause significant water quality problems. The maximum level found at Baptist Creek may have been the result of possible fertilizer run-off. Nitrite is not ordinarily found in high concentration in either surface water or in ground water, but can be present as an intermediate step in the oxidation of ammonia or in reduction of nitrate.

34. Lacey, Dominique

**Major:** Biology  
**Status:** Undergraduate Student, Senior  
**Presentation Type:** Poster  
**Research Advisor & Advisor’s Institution:** Paul M. Griffith and Michael J. McEachern, Department of Genetics, University of Georgia, Athens, GA  
**FVSU Research Mentor:** Prof. Seema Dhir  
**Title:** *Environmental Stresses Can Elevate Recombination near Telomeres and Cause Metastable Changes to Yeast Cell Growth Rates*

**Abstract:** Telomeres protect chromosome ends from recombination, but this capping is postulated to be relaxed in stressful environments in a way
vor, texture, coloration, high yield, shelf life and durability for transporta-

tion.

32. Jackson, Carissa

**Major:** Biotechnology

**Status:** Graduate Student

**Presentation Type:** Poster

**FVSU Research Mentor:** Dr. Nirmal Joshee

**Title:** A picture is worth a thousand words: Scanning Electron Micrography of Plant Tissues

**Abstract:** This work presents images from Scanning Electron Micrography (SEM) done at Agricultural Research Station, Fort Valley State University, using variable pressure scanning electron microscope (VP SEM: Hitachi 3400 NII). The pictures represent different types of plant samples being researched in biotechnology graduate program. The pictures represent Scutellaria and Paulownia tissues at various magnifications. Samples require four step preparation: fixation, dehydration, critical point drying, and sputter coating before they can be visualized through SEM. The primary fixing is done in 2.0 % glutaraldehyde, and secondary fixation is done using osmium tetroxide, followed by dehydration in ascending ethanol series. The samples are then critical point dried using EMS850 critical point dryer at 1250 psi and 35 °C. The specimens were sputter coated with gold using Denton desk V model for the thickness of 50 Å. Scanning electron microscopy is a powerful tool to understand surface micromorphology of various plant parts showing differences in cuticle deposition, presence of trichomes and stomata, wood morphology, pollen stigma interaction etc. These details are useful to understand plant physiology, secondary metabolite synthesis, plant adaptation strategies and taxonomy. SEM also offered insight into the effects of in vitro conditions on stomata function in Scutellaria species. SEM has a variety of applications in a number of scientific and industry-related fields, especially where characterizations of surface structures is required.

33. Jones, Brenna

**Major:** Biology

**Status:** Undergraduate Student

**Presentation Type:** Oral

**FVSU Research Mentor:** Dr. Melinda Davis

**Title:** Analysis of Soil and Water Nitrogen and Phosphorus in Middle Georgia

**Abstract:** The present study was aimed to establish an efficient and rapid protocol for in vitro plant propagation of Moringa oleifera through axillary shoot explants. Axillary shoot growth was induced by supplementing Murashige and Skoog’s (MS) medium with cytokinins. Of the three cytokinins tested, namely benzylaminopurine (BAP), kinetin (KN), and thidiazuron (TDZ), BAP at 0.5 mg/l showed a maximum of 92% of shoot proliferation with 15.2±0.87 number of shoots per explant with 2.26±0.05 cm mean height of individual shoots after 4 weeks. The combination of BAP (0.5 mg/l) and NAA (0.5 mg/l) showed 95% of shooting response with 17.4±0.36 number of shoots per explant with 3.62±0.03 cm means height of individual shoots. The combination of BAP (0.5 mg/l) and IAA (0.1 mg/l) produced 71% of shooting response with 7.4±0.46 number of shoots per explants with a mean shoot height of 1.50±0.2 cm. IAA in a concentration of 0.5 mg/l recorded 92% of rooting response with a maximum number of 15.0±0.89 root hairs in a mean root length of 8.3±0.23 cm. NAA in a concentration of 0.1 mg/l responded 93% of root formation with 14.6±1.19 number of roots per explants with a mean root length of 11.1±0.38 cm. The rooted plants were transferred to soil and vermiculite in the ratio of 1:1 and were kept in the humidity chamber for acclimatization. Fast growing embryogenic callus were also established from leaf segments of in vitro raised plants on MS medium supplemented with 4.52 uM 2,4-D and 11.09 uM BAP. The continuous production of Moringa regenerated plants via somatic embryogenesis could be used as a possible micropropagation and plant transformation system.

9. Paudel, Rajesh

**Major:** Plant Biotechnology

**Status:** Graduate Student

**Presentation Type:** Poster

**FVSU Research Mentor:** Dr. Hari P. Singh

**Title:** Effect of Nitrogen Fertilization on Sorghum Vegetative Growth, Dry Matter Yield and Quality

**Abstract:** Sorghum [Sorghum bicolor (L.) Moench] is a C4 crop that produces the multiple security like healthy food, feed, fodder and biofuel. Fertilization of nitrogen changes the tissue nitrogen which influences the quality of sorghum dry matter affecting the efficacy to convert the sorghum biomass into biofuel. With suitable nitrogen application and variety, desired quality can be obtained. The objective of this research is to assess different growth, development and quality parameters of sweet and bio-
mass sorghum grown with and without nitrogen input. Different growth and biomass quality parameters like plant height, leaf defoliation, biomass yield, leaf area index, photosynthesis rate, chlorophyll content, ADF (Acid Detergent Fiber), ADL (Acid Detergent Lignin), NDF (Neutral Detergent Fiber) and Ash will be determined. It is expected that results from proposed research will provide comparative effects of nitrogen fertilization on vegetative growth, dry matter yield and quality of sweet and biomass sorghum.

10. Rowland, TaNia

Major: Agriculture Economics

Status: Undergraduate Student, Senior

Presentation Type: Poster

FVSU Research Mentor: Dr. Erika Syles

Title: Among Fruit and Vegetable Producers in Georgia, Who’s adopting Organic Farming?

Abstract: Organic Farming is one of the fastest growing sectors of the United States agriculture. With fresh produce (fruits and vegetables) as the top-selling organic category, accounting for 43 percent of total organic sales. Consumer demand for organic food has risen over the past decade. It has risen because of the development and success of USDA’s organic regulatory program and label. The organic sector sales account for 4 percent of total food sales, which is still an estimated $28.4 billion in sales. Despite such strong growth in organic sales, the adoption of organic farming is still relatively small, which host only 1 percent of U.S farmers producing organically. The purpose of this study is to analyze who are adopting organic farming in the State of Georgia, while looking specifically at those who are fruit and vegetable farmers. Data was collected administering survey to 404 farmers in Georgia and analyzed using the legit model. Results indicated that if the farmers possessed organic experience, primarily in farm products, along with outlook of demand in organic farming, education level, and size of farm, they were more likely to adopt organic farming. Results can be used by policymakers and farm program developers to understand the state of fruit and vegetable farming in Georgia.

31. Ivey, Frank

Major: Biology

Status: Undergraduate Student, Senior

Presentation Type: Poster

Research Advisor & Institution: Harry J. Klee, Horticulture Sciences, Plant Cellular and Molecular Biology Department, University of Florida, Gainesville, FL

FVSU Research Mentor: Prof. Seema Dhir

Title: Analyzing Tomato Texture and Juiciness to Develop Improved Varieties

Abstract: Texture is a major contributor to the overall liking of tomato fruit. We examined texture quality of several different segregating populations of tomatoes resulting from crosses between a commercial variety tomato and different heirloom varieties of tomatoes. We used the heirloom varieties Maglia Rosa Cherry or Bear Creek as one of the parents in the crosses because of the great flavor that they have; however the texture of heirloom varieties is often not ideal. Our goal is to produce fruit that has great flavor and great texture as well as color for consumer likeness. We used a texture analyzer with integrated software to measure juiciness, skin toughness, skin elasticity and pericarp force. We also asked consumers to rate the varieties on liking of the tomato’s texture. We found varieties with improved texture attributes. Consumer liking of texture was correlated with juiciness, skin toughness, and the force needed to penetrate the pericarp. Our plan is to use this data to improve tomato varieties by using molecular breeding techniques to produce tomatoes with great fla-
29. Davis, Breon

**Major:** Biology  
**Status:** Undergraduate Student, Senior  
**Presentation Type:** Oral  
**FVSU Research Mentor:** Dr. Frederick McLaughlin  
**Title:** A ten year re-evaluation of the Fort Valley, Peach County Superfund Site

**Abstract:** Every ten years a re-evaluation is done around the Fort Valley, Georgia superfund site by the Environmental Protection Agency. This research focused on the contaminants; arsenic and lead that still may exist around the superfund site area. Soil samples were collected at various locations, and had a Total Elemental Analysis test ran on them for arsenic and lead. Total Elemental Analysis is a process used to determine the element, its composition, and can be both quantitative and qualitative. We hypothesized that there would be significant amounts of arsenic and lead existing around the superfund site. Methods used for the study included representative sampling and stratified random sampling. Our results showed that lead levels were elevated and arsenic levels were within normal range. The normal ranges for arsenic range from (0.39 ppm ~ 39ppm), for lead the ranges are from (10ppm ~40 ppm). Results showed that more research needs to be done due to the small sample sizes that were taken at different locations.

30. Fuller, Cameron

**Major:** Biology  
**Status:** Undergraduate Student  
**Presentation Type:** Oral  
**FVSU Research Mentor:** Dr. Frederick McLaughlin  
**Title:** A ten year re-evaluation of the Fort Valley, Peach County Superfund Site

**Abstract:** Every ten years a re-evaluation is done around the Fort Valley, Georgia superfund site by the Environmental Protection Agency. This research focused on the contaminants; arsenic and lead that still may exist around the superfund site area. Soil samples were collected at various locations, and had a Total Elemental Analysis test ran on them for arsenic and lead. Total Elemental Analysis is a process used to determine the element, its composition, and can be both quantitative and qualitative. We hypothesized that there would be significant amounts of arsenic and lead existing around the superfund site. Methods used for the study included representative sampling and stratified random sampling. Our results showed that lead levels were elevated and arsenic levels were within normal range. The normal ranges for arsenic range from (0.39 ppm ~ 39ppm), for lead the ranges are from (10ppm ~40 ppm). Results showed that more research needs to be done due to the small sample sizes that were taken at different locations.

11. Scott, Jasmine and Degala, Hema L.

**Major:** Food Engineering Laboratory, Agricultural Research Station  
**Status:** Graduate Student  
**Presentation Type:** Oral  
**FVSU Research Mentor:** Dr. Ajit K. Mahapatra  
**Title:** Use of Ultraviolet Light for Inactivation of Foodborne Microorganisms

**Abstract:** Ultraviolet (UV) light has been used for many years as a disinfectant for drinking water and waste water systems and proved efficient to inactivate potential waterborne microorganisms. In recent years, the research in food safety focused on use of novel nonthermal technologies due to the increased outbreaks of foodborne illnesses and consumer concern towards natural processed foods. UV light is one such method that can be used effectively to inactivate foodborne microorganisms. Ultraviolet light is an Electromagnetic Spectrum with three ranges of wavelengths namely UV-A (315-400 nm), UV-B (280-315 nm) and UV-C (200-280nm). UV-C is the short wave that includes germicidal ultraviolet wavelength. It holds considerable promise in food industry as a nonthermal alternative processing technique with no detrimental effect on consumer health. Though UV light has potentially been used in pasteurization of juices and beverages, it is under used in controlling microbial contamination in solids due to its inefficacy of penetration and restricted to surface inactivation. It is also applied in post lethality treatments of meat and as a means for shelf-life extension of fresh produce. It is a novel bactericidal that does not undesirably change the color, flavor, odor or taste of foods during processing. This study includes a comprehensive review of the background, applications and efficacy of UV light in inactivation of microorganisms in foods. The potential hazards, advantages, limitations, and future research needs of UV light will be discussed.

12. Smalling, Justice

**Major:** Plant Biotechnology  
**Status:** Graduate Student
Presentation Type: Poster

FVSU Research Mentor: Dr. Hari P. Singh

Title: Extraction and Characterization of Cellulosic Nanocrystals from Energycane Bagasse

Abstract: Energycane (Saccharum spp.) has been adopted as an alternative biofuel crop due to its favorable high biomass and fiber production. It is also resistant to stress and can be grown with minimum inputs on marginal lands and does not compete with the prime food crops like corn and wheat. Bagasse is a byproduct from energycane’s processing which is obtained as residual waste after the juice has been extracted from the stalks. Quite often bagasse is used to generate electricity for the sugar mills or else disposed of by burning on the field itself. Since cellulosic materials have a great potential as nanomaterial due to their abundance and renewability, energycane bagasse could be used as a potential source to produce cellulosic nanocrystals thereby adding value to the crop for rural farmers. Application of cellulosic nanocrystals has been emphasized by several recent studies showing potential inclusion of cellulosic biocomposites in biomaterials, drug delivery, reinforcement material, barrier film, membrane, and conductive materials. The aim of this research study is to develop optimized extraction protocol and characterization of cellulosic nanocrystals from energycane bagasse.

13. Smith, Derrick

Major: Plant Science/Biotechnology
Status: Graduate Student
Presentation Type: Poster
FVSU Research Mentor: Dr. Bipul K. Biswas, FVSU

Title: The effects of the environment on PTSL of four peach varieties

Abstract: The idea of this research is to characterize four peach varieties for their susceptibility or resistance to Peach Tree Short Life (PTSL). PTSL is a syndrome that instigates mortality before peach trees are able to bloom or early leaf development. Factors associated with tree death are freeze injury, bacterial canker, fungus cytospora, failure to maintain a pH of 6.0 and ring nematodes. Soil and morphological study of four peach tree varieties (viz. Autumnprince -Guardian, Sunprince-Halford, Juneprince-Guardian, and Rubyprince-Guardian) have been carried out. Soil study shows the pH is above 6 which is good to grow peach in this plot. Morphological study shows differences among these peach varieties.

28. Cunningham, Kristena

Major: Chemistry
Status: Undergraduate Student, Senior
Presentation Type: Oral
FVSU Research Mentor: Dr. Robin Bright

Title: Detection of Ethylene Glycol in Milk or Orange Juice by Surface Enhanced Raman Spectroscopy

Abstract: This research was conducted to determine the lowest concentration of ethylene glycol that can be detected by surface enhanced Raman spectroscopy. The different concentrations of a cysteine: gold nanoparticle conjugate were tested with a series of different concentrations of ethylene glycol. The ethylene glycol in the cysteine: gold nanoparticle conjugate solution were analyzed on a Raman spectrometer. Doing this research found that the concentration of the lowest level of ethylene glycol were determined with each batch of the cysteine: gold nanoparticle conjugates. This research is done to develop a possible analysis technique to prevent a bioterrorism attack on liquid food supply within the US.
Abstract: Methylphenidate (methyl 2-phenyl-2-piperidin-2-ylacetate) and its analogs have been studied extensively because their pharmacological usefulness. These compounds, in recent years, have shown potential in the treatment of cocaine abuse through antagonistic effects. Methylphenidate is characterized by two chiral carbons, one which of which is substituted by H, a phenyl ring, an ester, alcohol, or ether group, and piperidine nucleus (C1*). The second chiral carbon (C2*) is located on the piperidine ring with substitution possible at the amino nitrogen. Additionally, functional groups may be placed in positions about the phenyl ring. The current study proposes a new class of compounds where methylphenidate is modified by the addition of an ester group to C1*. The compounds were modeled using Density Functional Theory’s M06-2X method with a 6-311++G(d,p) basis set and molecular descriptors were found. Results revealed significant changes in dipole moment when comparing the modeled compounds to the parent methylphenidate structure. Additionally, the presented work will include the addition of halogens to the phenyl moiety because halogenated methylphenidate has been shown to exhibit more biological activity. The results of this study will lead to the tuning and synthesis of a new set of compounds with desired medical properties.

27. Culver, Rashaad

Major: Biology
Status: Undergraduate Student, Junior
Presentation Type: Oral
Research Advisor: Dr. David Shapiro-Ilan
FVSU Research Mentor: Dr. George Mbata
Title: Enhancing Natural Enemy Systems: Bio-control Implementation for Peachtree Borers

Abstract: The ultimate goal is to develop a non-toxic formulation to protect beneficial insect-killing nematodes from ultraviolet radiation and/or desiccation to enhance efficacy in suppression of the lesser peach tree borer. The objective was to determine whether different levels of a sprayable gel can protect beneficial nematodes from UV radiation and desiccation. Barricade gel was previously shown to greatly enhance nematode efficacy; however a major shortcoming was that the gel was applied at
Behavioral Sciences

14. Baker, Garrette; Finley, Nicholas; Leonard, Tanisha; Levatte, Tareka

Major: Business Administration
Status: Undergraduate Students, Junior
Presentation Type: Oral
FVSU Research Mentor: Christopher Torrance
Title: 3D Systems "Stuck in the Middle of the 3D Printing Boom"

Abstract: The purpose of this case study analysis is to identify management solutions for 3D Systems. 3D Systems is the world’s first 3D printing company with numerous printing solutions for use in various areas, both personal and commercial. Although initially the leader in this innovative area, a number of companies providing similar services have entered the market causing 3D Systems to rethink their business strategy. Additionally, 3D systems face three key challenges: weak financial position, easily imitated technology, and marketing issues. This analysis will cover 3D Systems’ history, current business objectives, internal and external organizational environment evaluations, and provide a strategic solution for the company. The team found that strategic partnerships would be the best approach for 3D Systems to gain market share and increase revenues. This analysis provides strategic management methods that could be utilized by other organizations facing similar issues as 3D Systems. This case study analysis was originally presented at the 2015 SAM International Management Case Competition and prepared solely by the FVSU Management Case Team.

15. Ceacal, Yasmin

Major: Psychology
Status: Undergraduate Student, Senior
Presentation Type: Oral
FVSU Research Mentor: Dr. Diane Byrd
Title: Self Concept: Doll Study 2015

16. Childs, Ashley

Major: Biology
Status: Undergraduate Student
Presentation Type: Poster
FVSU Research Mentor: Drs. Tiffani Holmes & Babatunde Ojo
Title: Computational Study of the Ester Modified Derivatives of Methylphenidate
Biology

24. Beaty, Brandon

Major: Plant Science/Biotechnology
Status: Undergraduate Student, Senior
Presentation Type: Poster
Research Advisor & Institution: Harry J. Klee, Horticulture Sciences: Plant Cellular and Molecular Biology Department, University of Florida, Gainesville, FL
FVSU Research Mentor: Dr. Sarwan Dhir
Title: Breeding for Quality Fruit Flavor: The Identification of Volatiles and Their Interactions with Sugar Content Correlated to Optimal Flavor

Abstract: The demand for tomatoes is steadily increasing, through the years farmers have specifically bred tomatoes to increase yield, shelf-life and fruit firmness; however, largely through neglect, the flavor quality has dropped over the years. The fruit’s flavor is derived from specific biochemical compounds, including sugars, acids and volatile compounds that contribute to sweetness, acidity and aroma, respectively. Volatiles, in particular, are what define the unique flavor of a tomato. Discovering the ideal volatile composition for good flavor will allow breeders to develop tomatoes with better flavor. Using the heirloom variety “Maglia Rosa Cherry” as the control for our experiments, we examined the development of fruit quality in a segregating population from the fourth generation after crossing Maglia Rosa Cherry and a commercial tomato variety. We identified lines from this cross that were most desired and further examined based on their properties to ensure they had the specific genes needed for crossbreeding and back-breeding. We conducted taste panels of fruit from these lines. To identify the flavor volatiles, we used a method called “ASD” which traps the volatiles to further analyze them using gas chromatography. We quantitated 20 volatiles plus glucose and fructose, and then correlated that data with the taste panel ratings. This method enables us to strategically select varieties based on their biochemical composition. Ultimately, these methods of analysis will allow production costs to stay at a minimum while still ensuring optimal fruit quality for the consumer.

16. Hill, Laura

Major: School Counselor Education
Status: Graduate Student
Presentation Type: Poster
FVSU Research Mentor: Dr. Mobley
Title: Transition from Elementary to Middle School

Abstract: The transition from elementary to middle school is a critical time that is considered to be one of the most difficult for students (Lyons & Woods, 2012). Choi states how transitioning students are fearful of being bullied, anxious about getting lost in a larger and unfamiliar environment, and concerned about the new demands academically and behaviorally. Their bodies are also changing as puberty begins (Dillon, 2008). An-
drews and Bishop (2012) state how “comprehensive transition programs work to build on the excitement of transitioning to a new school while equipping students with enough good information to overcome any apprehension” (p. 9). The study conducted is to determine whether a comprehensive transition program would be beneficial to students transitioning from elementary to middle school. A convenience sample of two comparable middle school’s sixth grade class in Middle Georgia will be used comparing one school with a well-developed comprehensive transitional program and a second school without such program established. Attendance records, office discipline referral records, and students’ Criterion-Referenced Competency Tests (CRCT) math and reading scores will be studied. A chi-square will be used to see if implementation of a comprehensive transitional program is statistically significant. There are three null hypotheses for this study: 1) As a result of a comprehensive transition program, academic performance will not improve; 2) As a result of a comprehensive transition program, attendance will not improve; and 3) As a result of a comprehensive transition program, disciplinary will not improve. Two out of three null hypotheses were rejected.

17. Graham, Charlotte

**Major:** School Counseling  
**Status:** Graduate Student  
**Presentation Type:** Poster  
**FVSU Research Mentor:** Dr. Jerry Mobley  
**Title:** The Impact of School-Based Mentoring Programs on At-Risk Students  

**Abstract:** Does a school-based mentoring program improve the behavior, attendance, and academics of at-risk students? Hypothesis 1. Implementing a school-based mentoring program will not improve the academic performance of at-risk students. 

Hypothesis 2. Implementing a school-based adult mentoring program will not improve the number of in-school suspensions and out of school suspensions for at-risk students. 

Hypothesis 3. Implementing a school-based adult mentoring program will not improve the attendance for at-risk students.
22. Wilcher, Jarvis

**Major:** School Counseling  
**Status:** Graduate Student  
**Presentation Type:** Poster  
**FVSU Research Mentor:** Jerry Mobley  
**Title:** Does Extracurricular Sports Activities Affect Students’ Academic Achievement?

**Abstract:** The influence that sports has on academics has been discussed for quite some time; some believe that the influence is positive, while others believe it is negative. Schools that offer extracurricular activities such as sports usually have fewer discipline referrals, higher standardized test scores, and higher attendance rates, than schools without any extracurricular activities. This study will explore the positive impact sports at the middle grade level in rural central Georgia. The independent variable is having extracurricular sports at the school and the dependent variables are academic achievement, attendance, and school disciplinary reports.

Hypothesis 1. There is no significant difference in the academic achievement of students who participate in athletics and those who do not.

Hypothesis 2. There will be no significant difference in attendance between the students who participate in athletics and those who do not.

Hypothesis 3. There will be no significant difference in disciplinary referrals between the students who participate in athletics and those who do not.

The findings were, having a significant amount of sports in the middle school level have some correlations with achievement and attendance, however, it does not improve disciplinary referrals. The middle school that offered multiple sports seems to have out-performed a comparable to a middle school that offers minimum sports.

23. Williams, Pierre

**Major:** Sociology  
**Status:** Undergraduate Student  
**Presentation Type:** Poster  
**FVSU Research Mentor:** Dr. Barbara Wyche

The subjects used for this study are twenty minors between the ages of 14 - 17. These are subjects who participate in the adult mentoring group at Warner Robins Middle School in Houston County Georgia. The subjects chosen to participate in this study are identified as at-risk students who participate in mentoring groups. These subjects are compared to those who are not exposed to such intervention.

Report cards, disciplinary records, and truancy information of the participating subjects will be the tools used to collect the data for this study. The data will be collected within the 2014-2015 academic school year.

The research findings for Hypothesis 1, implementing a school-based adult mentoring program will not improve the academic performance of at-risk students, was retained. The findings also report that Hypothesis 2, implementing a school-based adult mentoring program will not improve the number of in-school suspensions and out of school suspensions for at-risk students, was retained. The findings for Hypothesis 3, implementing a school-based adult mentoring program will not improve the attendance for at-risk students, proved retained. School-based adult mentoring programs are effective tools in motivating and encouraging at-risk students.

18. Matchett, Terrel

**Major:** School Counseling  
**Status:** Graduate Student  
**Presentation Type:** Poster  
**FVSU Research Mentor:** Dr. Jerry Mobley  
**Title:** Impact of RAMP Certification on Title I School Counseling Program

**Abstract:** This research examines Title I schools, particularly in the inner city, and the numerous challenges some of these schools face. Some of these challenges are low academic performance, poor attendance rates, and increase in behavior referrals. The question is: does having the Recognized ASCA Model Program (RAMP) certification in a school’s counseling program improve students’ performance in academics, attendance, and behavior at a Title I school. The sample school is an inner city, predominantly Black, Title I middle school, grades 6 – 8, earning RAMP certification in school year ending in 2010, 2011, and 2012. The data studied is from the school year prior to earning RAMP certification (2008-2009), compared to the school year after earning RAMP certification (2010-2011). Student outcome data such as state test scores, attendance rates, and yearly suspension rates, were examined. Although there are limitations to this research, improvement in academic, attendance, and behavior rates was evident when comparing the adequate yearly progress...
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(AYP) data, and suspension rates in the sample school’s academic year before earning RAMP, to the year after earning RAMP. This proves that having a RAMP certified counseling program does have impact on a Title I school.

19. Shine, Shatara; Futch, Michael; Taylor, Tuesday; Canady, Kendra; Taylor, Arlette; Stephens, Quinterious; Williams, Pierre; Baker, Kiara

Major: Sociology and Criminal Justice
Status: Undergraduate Student
Presentation Type: Poster
FVSU Research Mentor: Dr. Barbara Wyche
Title: The Effects of the Vietnam War on the Marriages of African American Veterans

Abstract: African American Vietnam veterans have been understudied. The purpose of this research is to measure the effect that the Vietnam War had on the African American veterans’ marriages. The difference between veterans with and without combat was also investigated. A survey instrument was developed. The survey was given to African American Vietnam veterans in the summer of 2014 in a southeastern state. The survey findings will be presented in a poster format. A survey instrument was developed. This survey was given to African American Vietnam veterans in the summer of 2014 in a southeastern state. The survey findings will be presented in a poster format. African American Vietnam veterans have been understudied. The findings of this survey should add to our knowledge of Vietnam African American veterans, their marriages, and on the effects of combat on African American veterans’ marriages.

20. Skurja, Samantha "Anni"

Major: Psychology
Status: Undergraduate Student
Presentation Type: Poster
FVSU Research Mentor: Diane Byrd
Title: Antisocial Personality Disorder: Diagnosing, Treating, and the Relation to Psychopathy

Abstract: Problem: The DSM’s focus of behavioral manifestations of ASPD, such as criminality, have caused dilemmas in diagnosing, as well as its proposed synonymity of psychopathy. Treatment for the disorder is rarely effective. Research for the problem was conducted through professional psychological journals books. Statistics were compared from different studies to see the reliability of the information being presented, and the general consensus of what ASPD and psychopathy varies from person to person. What has been determined is that the mental health world does not agree that psychopathy is interchangeable with ASPD, and that both of these related disorders need further study for a better diagnosis and treatment. I believe that because of the debate, as well as the misplaced focus on behavioral traits, too many people are being misdiagnosed.

21. Stallings, Randi

Major: Master of School counseling
Status: Graduate Student
Presentation Type: Oral
FVSU Research Mentor: Dr. Jerry Mobley
Title: Peer Mediation Program Effects on Behavior in Schools

Abstract: This study will use two middle schools: One middle school will have a peer mediation program and the other middle school will not have a peer mediation program. Both schools are located in Bibb County. The school that contains a peer mediation program is a magnet school and the other school is not. This study will focus on the sixth grade at each school.

The findings were designed to determine if peer mediation programs improve academics, attendance, and disciplinary behavior. This section will discuss each hypothesis calculated chi-square statistic to show if the null hypothesis will be retained or rejected.

Hypothesis 1: Peer mediation program will not improve CRCT scores.
Hypothesis 2: Peer mediation program will not improve attendance.
Hypothesis 3: Peer mediation program will not decrease disciplinary behavior.

The middle school that has the Peer mediation program seems to have out-performed the middle school that does not have a Peer mediation program in CRCT scores and suspension rates. The implication for each hypothesis will be discussed in order.