Aim 1 - Science Teacher Workshops

Aim 1 Title:

Develop and conduct science teachers' workshops that enable the teachers to use food safety experiments in the classroom and advise students on careers in food safety

Aim 1 Project Team:

Aim 1 team leaders:
Salam A. Ibrahim, North Carolina A&T State University; contact ibrah001@ncat.edu

Aim 1 team members:
Martha Verghese, Alabama A&M University; contact martha.verghese@aamu.edu
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Aim 1 Teacher Resources:

In addition to resources found throughout this page, teachers can find additional resources on the Highschool Teacher Food Safety Resources page.

Aim 1 Current Efforts:

Aim 1 Completed Efforts:

2016 Food Safety Activities

On July 14, 2016, the food microbiology and biotechnology laboratory at **North Carolina A&T State University** conducted a workshop at the Greensboro Sheraton as part of the North Carolina CTE summer conference for family and consumer science teachers. A total of 25 high school teachers attended the sessions for those interested in food science/safety. Presenters and topics included:

Dr. Rabin Gyawali - Introduction to food safety and microbiology

Dr. Tahl Zimmerman - Food biotechnology and GMOs

Temitayo Obanla - Food fermentation and health benefits

Nwadi Nwamaioha - What you may not know about food science/safety

Aseel Issa - Development of a novel antibacterial nanocomposite film in food packaging for safe food products

North Carolina Association of Family and Consumer Science Annual Conference

"Healthy Foods for Healthy Families and Communities"

April 7-9, 2016, New Bern, North Carolina

On Saturday, 9 April 2016, the Food and Nutritional Sciences Program at **North Carolina A&T State University** organized a symposium for high school teachers who are interested in food safety and nutrition education. The symposium was held during the North Carolina Association of Family and Consumer Science Annual Meeting. The topics covered were from food safety, food safety practices, healthy foods for the healthy family, and how to practice healthy food for a healthy lifestyle.

A. ORAL PRESENTATIONS

Presenters	Titles
Dr. Salam A. Ibrahim	Safety and health benefits of dairy products
Abdulhakim Sharaf-Eddin	Seven Steps for A Healthy Life
Temitayo Obanla	Common Family Medicines and Your Health
Aseel Issa	Development of a Novel Antibacterial Nanocomposite Film for Food Safety Applications
Samirah Alotaibi	Edible Coating for food safety application in shrimp
Priscilla Randolph	Painting our Community Green, One Thumb at a Time
Nwadiuto Nwamaioha	*Moringa oleifera*: a food plant with multiple food safety and health benefits
Dr. Reza Tahergorabi	Fish and Shellfish (food safety and human health)
Dr. Hye Won Kang	Effect of Turmeric in High Fat Induced Fatty Liver using Mice Model
Dr. Tahl Zimmerman	Food as medicine: The Effects of Diet on Cancer

B. RESEARCH POSTER PRESENTATIONS: (April 8, 2016)

1. Amira A. Ayad, Deiaa Gad El-Rab, Abolghasem Shahbazi, Mulumebet Worku, Valerie L. Giddings, Salam. A. Ibrahim. Date palm (*Phoenix dactylifera L.*) as a primary constituent in developing a medium for cultivation of lactic acid bacteria.
2. Rabin Gyawali, Nadia Y. Idris, Mulumebet Worku, Valerie L. Giddings, Salam A. Ibrahim. Effects of hydrocolloids on acid whey production of nonfat Greek yogurt.
3. Belal J. Muhialdin, Salam A. Ibrahim. Growth inhibition of three spoilage fungi by novel antifungal peptides produced by *Lactobacillus plantarum* TE10.
4. Temitayo Obanla, Imani Grimes, Mulumebet Worku, Valerie L. Giddings, Salam A. Ibrahim. Impact of aspirin on growth and functionality of *Lact obacillus rhamnosus* (ATCC 53103) after 12 weeks of exposure using natural selection.

Southern Guilford High School of Greensboro, NC

On Wednesday, 23 March 2016, the students from Dr. Salam Ibrahim's Food Microbiology & Biotechnology Laboratory at **North Carolina A&T State University** traveled to Southern Guilford High School in Greensboro, NC to train 11th and 12th grade students and teachers about Food Safety /Technology. The discussion began with a brief introduction of all graduate students who work under the supervision of Dr. Ibrahim.

Students present several aspects of food science/safety. Each student briefly discussed individual research topics and explained the significance of research in Food Safety and agriculture-related disciplines. The numerous career opportunities and key institutions for education were also presented, as well as a review of Cornell's Food Safety Lab site and the Food Safety Wiki (Welcome to Food Safety Wiki!).

Opportunities for agriculture-related scholarships was presented with an offer to join the NC A&T State University Summer high school program sponsored by the School of Agricultural & Environmental Science at North Carolina A&T State University.

Presentations:

Dr. Salam A. Ibrahim: Introduction to food safety

Tematayo Obanla: What is food safety and why study food safety? (Food Science/safety Careers)

Rabin Gyawali: How to control bad bacteria in foods

William Rowe: Food safety of dairy foods and lactose intolerance

Imani Grimes: Basic microbiology techniques

Laboratory demonstrations: Basic techniques in food microbiology and food safety

2015 Food Safety Activities

Norovirus Teacher Workshop Report 2015

The Norovirus Workshop, "Outbreak – Attack of the Norovirus" was presented on July 29, 2015 at **North Carolina Central University**'s Biomanufacturing Research Institute and Technology Enterprise (BRITE) in conjunction with **North Carolina State University**. Teachers agreed that the workshop was an excellent use of their time and were pleased with the module and materials they received to implement the module into their classrooms. There was such a lively discussion among the teachers that they wanted a list of participants so they could continue their discussions.

There were 14 participants (13 teachers (9 middle school teachers and 4 high schools) and 1 representative from North Carolina Department of Public Instruction). Subjects taught by these teachers include: Foods I; Foods II Biology, 7th and 8th grade science/Biotech/ /AP Biology/Honors Bio/ CTE Health Occupation and Consumer Health.

The teachers came from across the state of North Carolina: 1 from Davie County; I from Vance County; 1 from Moore County, 3 from Wake County; 1 from King NC; 1 from Robeson County; 1 from Rockingham County, 2 from Charlotte Mecklenburg County; 1 from Harnett Co; and 1 from Cumberland County and 1 from Randolph County.

OUTBREAK, is a teaching module which was developed for teachers in 2012 to specifically address Norovirus and food safety.

For: High school and middle school science teachers and CTE teachers

All activities were aligned with North Carolina State and National Standards.

Rationale for a Norovirus Workshop:

Norovirus is the most common cause of acute gastroenteritis worldwide. North Carolina public health officials report that from October to April each year, there is an upswing in the number of reported Norovirus illnesses. In January, February, and March 2012, there were numerous reported outbreaks within the state. According to the Centers for Disease Control and Prevention, Norovirus is also the most common cause of food borne disease outbreaks in the United States. Each year as many as 1 in 6 people get sick from eating contaminated food. Fifty percent of all recognized outbreaks of food-related illness are caused by Norovirus.

Learning outcomes:

- Properties of viruses and how they differ from bacteria
- How viruses multiply
- The symptoms of Norovirus and its transmission routes
- Common food safety practices to prevent foodborne illnesses

The Workshop:

- Open to high school and middle school science teachers and CTE Teachers
- Teachers received workshop materials including a notebook of activities, manipulatives for hands on activities, and other supporting resources including CDs
- Lunch and snacks were provided
- Teachers received a certificate from BRITE which should qualify for 1 hour of CEUs

Support for the Workshop came from:

- North Carolina State University
- North Carolina Central University, BRITE
- Liju Yang, PhD. North Carolina Central University

Teachers participating in an engagement activity (skit) at the the Norovirus Workshop presented at NCCU's BRITE Center (July 29, 2015)

Oh My Gosh, It's a Food Fight!

Oh My Gosh, It's a Food Fight teacher workshop was presented on June 29th, 2015, at **North Carolina Central University's** Biomanufactoring Research Institute and Technology Enterprise (BRITE). Teachers agreed that the workshop was an excellent use of their time and were pleased with the module and materials they received to implement the module into their classrooms.

There were 22 participants (8 High School Science teachers; 4 middle school science teachers, 2 CTE Biotechnology teachers middle school, 4 Foods and Nutrition Teachers , High School, 3 Heath & Nursing HS and 1 Science Consultant).

Oh My Gosh, It's a Food Fight is a teaching module, which was developed for teachers in 2015 specifically to address the topic of genetically modified organisms and the associated controversial topic of food safety.

Presenters: Betty Brown M.S.: North Carolina Central University, director of Outreach Programs for BRITE

Carla Oldham, Ph.D.: North Carolina Central University, assistant professor in the Department of Pharmaceutical Sciences

Lynette Johnston, Ph.D.: North Carolina State University, curriculum coordinator in the Department of Food, Bioprocessing and Nutrition Sciences

Jessica Jenkins Broglie PhD; North Carolina Central University; Postdoctoral Research Fellow, BRITE

Faith Brown-Freeman; University of North Carolina at Greensboro; PhD Candidate /University Supervisor

For: High school and middle school science teachers and CTE teachers

All activities were aligned with North Carolina State University and National Standards.

Rationale for **Oh My Gosh, It's a Food Fight** Workshop:

Oh My Gosh, It's a Food Fight is a teaching module that was developed in 2015 to provide a format for students to better understand the complexity of the issues surrounding the use of biotechnology to produce genetically modified foods (GMOs). Students are exposed to a variety of issues surrounding GMOs, which can often be confusing and misleading. This module enabled teachers to bring new exciting hands-on science experiences to their classrooms. It encouraged students to discover the potential benefits and risks of genetically modified foods such as corn through critical thinking. In addition, it encouraged the use of appropriate vocabulary to argue the pros and cons of using GMOs.

From the module students will learn:

- What are GMOs?
- How does foreign DNA get into a cell?
- The process of developing GM crops
- Benefits vs. controversies surrounding the use of GMOs
- How to recognize bias in print media and become more aware of the need to identify sources
- How GMOs identifies in our food supply?

The Workshop:

- Open to High School and Middle School science teachers and CTE Teachers
- Teachers received workshop materials including a notebook of activities, manipulatives for hands on activities, and other supporting resources
- Lunch and snacks were provided
- Teachers received a certificate from BRITE which should qualify for 1 hour of CEU credit

Support for the Workshop came from:

- Biomanufactoring and Process Development
- North Carolina State University

Partial support from North Carolina Central University, BRITE

Alabama A&M University conducted workshop sessions in April, June, September, and December 2015. The day-long (spring and fall) and week-long (summer) workshops focused on using food science/food safety experiments in the classroom and showing the various careers in Food Science and Food safety.

Science teachers and counselors in the Huntsville and Birmingham school districts (Sparkman High School (Huntsville, AL), Colombia High School (Huntsville, AL), Buckhorn High School (Huntsville, AL), Madison County High School (Huntsville, AL), Bob Jones High School (Madison, AL), Fairfield High School (Birmingham, AL), Ramsey High School (Huntsville, AL)) were contacted and information (booklets) on Food Science/Food Safety including lab experiments to be used in science classes were distributed. Contacts were made for future/potential students for the summer programs. There will be 12 high school science teachers visiting the department in the 4th week of January 2016 to be trained in Food Science/safety/chemistry experiments from the booklets provided to them.

Salam A. Ibrahim at **North Carolina A&T State University** worked with the NC Community College System and Reno A. Palombit (NC Department of Public Instruction Career & Technical Education) to host a food science workshop for high school teachers on July 13-14 in the Department of Family and Consumer Sciences, **NCA&T**, Greensboro, NC. A total of 19 teachers attended the workshop. Topics were:

- Teaching food science in the FACS classroom
- Food safety class
- Laboratory safety
- Understanding bacteria
- Food safety practices
- hazard associated with food products (3 hazards: biological, chemicals and physical)

Laboratory practices:

- Preparation of laboratory solutions, agar plates, peptone
- Effect of cooling and heating on bacteria survival and growth in food
- Fresh hamburger vs hamburger left out overnight
- Milk kept in the refrigerator vs room temperature




Teachers can use this site as a valuable resource on food safety:

http://www.fda.gov/downloads/Food/FoodScienceResearch/ToolsMaterials/UCM430367.pdf

Salam A. Ibrahim (**North Carolina A&T Sate University)** with help from Reno A. Palombit (NC Department of Public Instruction Career & Technical Education), hosted several food technology classes for high school teachers during spring 2015. The classes focused on food science and relevant technology plus modern food safety practices. Teachers were provided materials, equipment, and lectures. These activities were part of two food science classes: FCS 235 Introduction to Food Science and FCS 346 Food Safety and Sanitation.

Topics included:

- What is food science, food technology, food processing
- Understanding food safety
- Fermentation
- Probiotics
- Food proteins (animal and plant sources)
- Food carbohydrates
- Fibers
- Lipids: Good lipids vs bad lipids
- Resources to teach food science
- Food science organizations (IFT, ACS, ASM, ADSA)
- How to teach the new food technology curriculum at high school

2014 Food Safety Activities

Graduate students from **Cornell University** presented a workshop on foodborne outbreak investigation on **November 2, 2014** at STANYS conference in Rochester, NY. 14 science teachers attended the workshop. In this interactive workshop, teachers were introduced to general steps involved in an outbreak investigation along with specific materials that could be tailored to their classroom settings. Learning objectives were also developed and communicated to science teachers to emphasize that the workshop content is consistent with the Next-generation science standards. Materials for the workshop can be found here.

The **Department of Food Science** at **Cornell University** hosted a one-week workshop for middle and high school science teachers **July 7-11, 2014**. Within that workshop, the food safety lab led a teaching module entitled "Food Safety Detectives" for 10 teachers. The module started out with a mock foodborne outbreak scenario. The teachers were able to deduce the likely source and cause of the outbreak, and used this information to guide their sample collection, which consisted of plating food samples on growth medium and assessing any microbial growth. The next day results were reviewed and followed by in-depth discussions on how the teachers could bring these activities to the classroom.

The department of Food Science at **Cornell University** hosted a workshop titled "Food Safety Detectives" through the Cornell Institute of Biology Teachers (CIBT) on April 26, 2014. In this 1.5 h workshop, 16 teachers from NY state played the role of foodborne pathogen epidemiologists to investigate an unusual number of potentially linked gastrointestinal illnesses using the combination of epidemiological and microbiological information. The workshop activity was followed with a discussion on ways to improve the activity for an effective implementation in a classroom setting.

During the summer of 2014, **North Carolina State** and **North Carolina Central Universities** partnered to present a norovirus learning module for middle and high school teachers and students. "**Attack of the Norovirus!**" is a learning module developed for teachers which aligns with National Education Standards and addresses the fundamentals of norovirus and its role as a major contributor to foodborne disease.

Norovirus is the most common cause of acute gastroenteritis worldwide. According to the Centers for Disease Control and Prevention Norovirus is also the most common cause of food borne disease outbreaks in the United States. Each year as many as 1 in 6 people get sick from eating contaminated food. Over 50% of all recognized outbreaks of food-related illness are caused by norovirus.

Learning Objectives:

- Properties of viruses and how they differ from bacteria
- How viruses multiply
- The symptoms of Norovirus and its transmission routes
- Common food safety practices to prevent foodborne illnesses
- Molecular methods for detecting norovirus

On June 30, 2014, a teacher workshop was given at **North Carolina Central University's** Biomanufacturing Research Institute and Technology Enterprise (BRITE). There were 22 participants (19 teachers; 5 middle school teachers and 14 high school). The BRITE Futures program collaborates with educational leaders from universities and K-12 teachers to foster North Carolina's understanding of scientific concepts and skills. Teachers agreed that the workshop was an excellent use of their time and were pleased with the module.

A food safety workshop for middle and high school teachers was conducted by members from **North Carolina A&T State University** on April 1st, 2014 at the NC FCCLA State Leadership Conference in Greensboro, NC. The workshop included several presentations and a group discussion as part of the Career and Technical Education Program for the Family and Consumer Sciences Education.

- Dr. Rosa Purcell - *Welcoming remarks*
- Dr. Salam A. Ibrahim - *Introduction to food science and safety*
- Dr. Saeed A. Hayek - *Introduction to safety of food products*
- Dr. Bernice Karltone-Senaye - *Practices in food safety*
- Dr. Madhavi Hathurusinghe - *Toxins and Allergens in Food*
- Rabin Gyawali - *Food fermentation and probiotics*
- Ms. Samorya Evans - *Food Microbiology*
- Mr. Temitayo Obanla - *Food Biotechnology*
- Ms. Amira Ayad - *Health and nutrition*

Members of Dr. Martha Verghese's group at **Alabama A&M University** made multiple trips to local, regional high schools, and community colleges (Hazel Green, Ramsey High School, Fairfield Prep, Bishop State, Johnson High School, Lee High School, New Century High School, Grissom High School, Bob Jones High School, and Bishop State Community College) during Spring and Fall 2014 to introduce Food Science/Food Safety careers to Middle and High School teachers, counselors, and students. Several interactive hands-on experiments were conducted during these workshops.

Members of **Alabama A&M University** held a workshop for high school science teachers during teacher work day each during Spring and Fall, 2014. The science teachers were able to participate in hands-on activities associated with food science/food safety.

Members of **Alabama A&M University** hosted two workshops for K-12 science teachers during the late spring and summer, 2014.

High school students, teachers, and counselors were brought to the **Alabama A&M** campus for recruitment and exposure to our Food Science program. (Picture below: Food Science undergraduate and graduate students who discussed the various career options in food science).

2013 Food Safety Activities

Graduate students and professors from **Cornell's Food Safety Laboratory** facilitated a food safety workshop through the **Cornell Institute for Biology Teachers (CIBT)** summer program for middle school teachers **July 10th and 11th, 2013**. Twenty middle school teachers throughout New York participated in the workshop which sought to inform teachers about how to implement scientific exercises in their classrooms. Teachers were given a brief introduction to food safety by Dr. Martin Wiedmann before being presented with a mock outbreak scenario. After analyzing data obtained from patient interviews and calculating risk ratios, a differential diagnosis was used to guide environmental and food sampling to further investigate the food item responsible for the outbreak. A DNA extraction activity illustrated how molecular techniques are used in outbreak investigation to confirm the causative agent. At the conclusion of the workshop, teachers were provided resources and guidance for incorporating the various activities in their curricula.

The food safety and microbiology group at **North Carolina A&T State University** held a two-hour food safety and preparation workshop at **Wesley Chapel AME Zion Church**, Asheboro, NC for the high school teachers and church members on **Aug 17, 2013**. The workshop was about health living as related to safety and healthy foods.

Activities and Presentations:

Dr. Rosa Purcell: Introduction to food and health
Dr Salam Ibrahim: how to prepare healthy and safe yogurt for the family
Marcella Cheek-Crook: Demonstration on food preparation and sensory evaluation of yogurt
Temmytayo Abanla, Bernice Karlton-Senaye, and Amira Ayad: Preparation and demonstrations for yogurt
Amira Ayad: Nutritional value of yogurt samples

The following were related to the 4 food safety steps:

Dr. Reza Tahergorabi: Basic food preservations

Bernice Karlton-Senaye: Cleaning and hand washing
Rabin Gyawali: Separation and fresh produce washing
Saeed Hayek: Temperature control, cooks, and chill

Career and Technical Education (CTE) Summer Conference for Family and Consumer Sciences Education was conducted on **July 24, 2013** at **Koury Convention Center in Greensboro, NC**. This workshop focused on helping teachers understand basic knowledge in the area of food science including food safety/ practices, basic issues related to food microbiology and basic understanding of food protection and defense. **North Carolina A &T State University** food microbiology and safety laboratory will deliver a lecture on various topics. The graduate students in the food and nutritional science will present this lecture; the audiences for this workshop will be high school teachers of family and consumer sciences.

Presenters:

1. Drs.Valerie L. Giddings and Rosa Purcell - Introduction
2. Saeed Hayek - Food microbiology
3. Bernice Karlton - Senaye-Food Safety
4. Tarik Bor - Food Preservatives
5. Amira Ayad - Nutrition
6. Rabin Gyawali - Probiotics
7. Temitayo Obanla - Food Biotechnology
8. Marcella Cheek-Crook - Food defense

Members of Dr. Martha Verghese's group at **Alabama A&M University** made multiple trips to local, regional high schools, and community colleges (Hazel Green, Ramsey High School, Fairfield Prep, Bishop State, Johnson High School, Lee High School, New Century High School, Grissom High School, Bob Jones High School, and Bishop State Community College) during Fall 2013 to introduce Food Science/Food Safety careers to Middle and High School teachers, counselors, and students. Several interactive hands-on experiments were conducted during these workshops.

Alabama A&M University hosted a one-day “Teaching Science through Food Science” workshop for Middle and High School Science Teachers on **June 27, 2013**, from 8:30-5:00 pm. Ten teachers attended the workshop and participated in the activities listed below. All teachers were given protocols for experiments to be used in their classrooms.

Presentations
1. Introduction to Food Science
2. Applications in Food Safety
3. Bacterial Toxins and Food Borne Illness
4. Introduction to HACCP

Labs and Hands-on activities
1. 5 Second Rule
2. Introduction to Serial Dilutions
3. Isolation and enumeration of microorganisms from ground beef
4. Gram staining and microscope skills
5. Ice cream --Food safety

NC State partnered with **North Carolina Central University's** Biomanufacturing Research Institute and Technology Enterprise (BRITE) facility in Durham, NC, to present a norovirus learning module to 25 high school students on July 24, 2013. The BRITE Futures program collaborates with educational leaders from universities and K-12 teachers to foster North Carolina's understanding of scientific concepts and skills. A second workshop was held on August 8, 2013, for 21 middle school and high school teachers.

Texas Wesleyan University held its third annual Teaching Food Safety Workshop for High School Science Teachers on July 29th, 2013, from 9:00 am - 3:00 pm. Seven teachers attended the workshop.

On November 12, 2013 at the **Purdue University** College of Agriculture PK-12 Engagement and Outreach Showcase, the Oliver lab presented a poster entitled "Introducing High School Students to Food Safety Microbiology Research Methods in a Hands-on Laboratory Setting". The presentation outlined the successful collaboration of the Oliver lab with a local high school to include food safety research in advanced science curriculum. Interested teachers, counselors, and administrators were invited to take an example syllabus and develop relationships with Purdue researchers for future collaborations.

2012 Food Safety Activities

Cornell University hosted a food safety workshop for thirteen high school science teachers from across New York State on July 24-25, 2012. Teachers spent four hours per day with Dr. Teresa Bergholz and Jihun Kang at the food safety workshop and participated in a mock foodborne disease outbreak investigation, collected and analyzed microbiological samples, extracted DNA, and were introduced to DNA fingerprinting techniques through an interactive DNA model.

Rachel Pfuntner, a graduate student at **Cornell University** held a food safety workshop during the 2012 Conference of the New York Association of Agricultural Educators on June 24, 2012 in Croghan, NY. A total of forty high school teachers spent two hours investigating an outbreak of foodborne illness using a combination of microbiological and eipdemiological techniques.

Cornell University held an interactive workshop through the Cornell Institute of Biology Teachers on **Food Safety Investigation in the Science Classroom** on January 14, 2012. Twenty teachers attended this one-hour session, which involved an interactive demonstration of investigating a foodborne illness outbreak.

Dr. Alicia Orta-Ramirez and Travis Chapin from the Department of Food Science at **Cornell University** traveled to White Marsh, Maryland to present an interactive workshop on **Food Science and Food Safety Investigations in the Classroom** for middle and high school chemistry, life science, and nutrition and consumer science teachers from Harford County Public Schools. The event was hosted by Steve Andon of TIC Gums at the company's headquarters and production facility on April 28, 2012.

The Food and Nutritional Science Program at **NCA&TSU** participated in a workshop for family and consumer science teachers on Monday 23rd January 2012. This was a mandatory workshop and approximately 65 FACS teachers attended this activity. The location was Atkins Academic /Technology High School, Old Greensboro Road, Winston Salem NC 27101.

Title of our presentation: Food Science, Safety, and Technology

Presentations:

1. Food Components - Rabin Gyawali

2. Food Safety – Introduction - Madhavi Hathurusinghe

3. Food Safety Applications - Bernice Karlton- Senaye

4. Food Protection and Defense - Larriale Spruill

5. Field experiences in food science - Marcella Crook

The **North Carolina A & T State University** food microbiology and safety laboratory delivered a lecture on **"Food Science Careers: Challenges and Opportunities in the 21 st Century"** at the annual conference of North Carolina Association of Family and Consumer Sciences (NCAFCS) on Saturday, February 25th 2012 at 2.00-3.00 PM, in Mellenium Hotel, Durham, North Carolina. This lecture was presented by the graduate students in the food and nutritional science; the audience for this workshop were members of NC-AFCS.

Presenters:

Introduction - Dr. Salam Ibrahim

Food Safety – Saeed Hayek

Product development; Food Chemistry – Rabin Gyawali

Job opportunities in food service – Bernice Karlton-Senaye

Food Protection and defense – Madhavi Hathurusinghe & Marcella Cheek-Crook

Update: (June 27, 2012)

Our food microbiology group at North Carolina A&T State University held their first Food Safety Workshop for High School student's workshop on July, 2012. This is part of the summer Research Apprenticeship program. The workshop was titled Food science and safety: Introduction and applications.

The **Food and Nutritional Sciences Program at NCA&TSU** held a one day three hour introductory food science/food safety hands-on preconference on Monday, July 24, 2012 from 1:00am-4:00pm as part of the regional North Carolina Family and Consumer Sciences Education Summer Conference. Seventeen local high school teachers attended this conference and had the opportunity to learn about recent issues with food safety /sciences. The following presentations were given:

1. Introduction to food safety/technology,
2. Introduction to food microbiology
3. Food fermentation
4. Food contamination and chemical contaminants in food products
5. Food quality control-HACCP
6. Food defense and protection

Several demonstrations were also included. The workshop was led by Dr. Salam A. Ibrahim from the Food and Nutritional Sciences Program at NCA&TSU.

North Carolina State University, along with **North Carolina Central University**, developed a learning module which focuses on a general understanding of viruses, as well as the implications of norovirus in food safety. North Carolina State University and NCCU presented the module "Outbreak! Attack of the Norovirus!", at NC A&T University's **Golden Leaf Summer Academy Teacher Workshop** in Greensboro, NC on June 19, 2012. There were 52 middle school and high school teachers participating in the workshop, representing over 8 counties within the state.

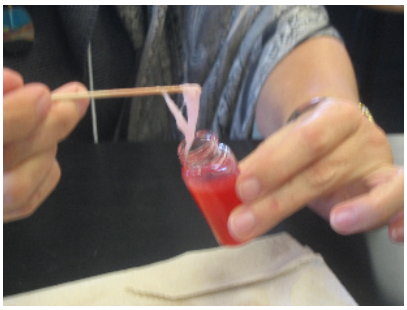
A second workshop was held on August 8, 2012 at **North Carolina Central University's Biomanufacturing Research Institute and Technology Enterprise (BRITE)** facility in Durham, NC. A total of 25 participants, representing nine counties from across the state, attended the workshop. Evaluations of the module were extremely positive, resulting in the motivation of teachers to include food safety within their curriculum. Additional details on the module and can be found here. To request more information, please contact Lynette Johnston lmkleman@ncsu.edu.

Texas Wesleyan University held its second annual **Teaching Food Safety Workshop for High School Science Teachers** on August 6th, 2012, from 9:00 am - 3:00 pm. The workshop was led by Dr. Angela J. Roberts from the Department of Biology. Thirteen teachers, representing ten different high schools and five different school districts, attended the workshop. The teachers participated in hands-on activities and discussions focusing on i) the GAPS Food Safety Investigation Curriculum, ii) the Pathogen Tracker Game, and iii) careers in food safety. A schedule and learning objectives for the workshop can be found here.

Alabama A&M University hosted a one day science workshop for high school science teachers during spring 2012. The science teachers were invited with their students to the department to participate in hands-on activities associated with food science/food safety.

2011 Food Safety Activities

Cornell University held their first **Food Safety Workshop for Middle and High School Science Teachers** workshop on **October 22, 2011** . Nine teachers from NY state attended the 6-hour course which included lectures, demos, and hands-on sessions. For an agenda and learning outcomes, click here .



Cornell University submitted an abstract, entitled "Introducing Food Safety Investigation in the Science Classroom" and presented two back-to-back sessions at the 2011 Science Teachers Association of New York State (STANYS) conference on **November 7, 2011** in Rochester, NY.

The Food and Nutritional Sciences Program at NCA&TSU held a one day six hour introductory food science/food safety hands-on preconference on Monday, July 25, 2011 from 9:00am-3:00 pm as part of the North Carolina Family and Consumer Sciences Education Summer Conference. 11 local high school teachers attended this conference in which the following presentations were given: Introduction to Food Science and Technology, Introduction to Food Microbiology and Food Safety, Food Contamination, Chemical Contaminants in Food, Food Quality Control-HACCP, Food Labeling: An Important Challenge in Food Safety. The presentations can be viewed here. For more information, contact Judith C. Simon, Family and Consumer Sciences Education, Department of Public Instruction. 919.414.1949919.414.1949 (cell)

Texas Wesleyan University hosted a one-day "**Teaching Food Safety Workshop**" for High School Science Teachers on August 3rd, 2011 from 9:00 am - 4:00 pm. The workshop was led by Dr. Angela J. Roberts from the Department of Biology. Nine teachers attended the workshop and participated in hands-on activities and discussions focusing on i) the GAPS Food Safety Investigation Curriculum, ii) the Pathogen Tracker Game, and iii) careers in food safety. More information can be found at http://www.txwes.edu/biology/TeachingFoodSafetyWorkshop.htm or by calling Dr. Roberts at (817) 531-6559(817) 531-6559(817) 531-6559(817) 531-6559(817) 531-6559(817) 531-6559(817) 531-6559.

Alabama A&M University participated in multiple food science sessions with high school teachers and students during the Fall 2011 semester. Please contact Martha Verghese martha.verghese@aamu.edu for more information.