

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Childhood Obesity - Youth/Adult Obesity

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
701	Nutrient Composition of Food	10%		10%	
702	Requirements and Function of Nutrients and Other Food Components	10%		10%	
703	Nutrition Education and Behavior	25%		25%	
704	Nutrition and Hunger in the Population	15%		15%	
724	Healthy Lifestyle	40%		40%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	6.0	0.0	5.0	0.0
Actual Paid	26.0	0.0	8.0	0.0
Actual Volunteer	391.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
452066	0	487455	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1546254	0	2265668	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
546400	0	1742208	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- To identify the factors that promote excessive weight gain as well as protect against childhood obesity
- Measure how children born small for age are different with respect to body composition and risk for diabetes prior to developing diabetes or obesity.
- Investigate how perilipin A works in adipocytes to control fat storage and fat breakdown.
- Collect and analyze data on obesity-related measures (i.e., BMI) in adults and children
- Examine how weight loss affects calcium absorption and bone mass
- Create a multidisciplinary program comprising of faculty, staff, the medical community, industry partners and government officials
- Conduct adult/youth education and deliver targeted messages on healthy food choices and increased physical activity education using the following strategies:

Direct Methods:

- Educate Youth
- Educate Parents
- Educate Volunteers
- Food and Fitness Ambassadors
- Educate Child Health Summit Professionals
- Educate Teachers/School Nurses
- Educate Communities

Indirect Methods:

- Website
- Social Marketing

2. Brief description of the target audience

- Clinicians, Physicians and Nurses
- Health Care Professionals
- Hospitals (including teaching hospitals)
- Staff and students who gain valuable scientific experience
- Industry partners that benefit from fundamental and applied research in obesity and related chronic diseases
- Communities that benefit from increased knowledge about the mechanisms involved in obesity
- Other faculty and staff working on similar research
- Health-related organizations and foundations interested in obesity/nutrition issues
- School Age Youth
- Teens
- Teachers
- After School Providers
- Parents
- Volunteers
- Extension Professionals
- State and County Agencies and Organizations
- Schools

3. How was eXtension used?

RCE faculty used the following CoPs: Family Food and Fitness; Evaluation; Creating Healthy Communities; Healthy Food Choice in Schools; Community Nutrition Education; Diabetes and the Learning Network. Faculty answered ask the expert questions, developed collaborative educational products, conducted learn professional development sessions and provided leadership to CoPs.

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	11167	29588	33500	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	7	47	54

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- A variety of strategies will be implemented to reach target audiences. This will include and not be limited to workshops, field visits, classes, newsletters, media releases, electronic communications, publications. In addition a trained volunteer teaching base will be developed. Quantitative reports of participation will be collected

Year **Actual**
 2014 0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Short Term - Individuals gain awareness, knowledge, skills related to: Attitudes about healthy eating for adults/youth. Healthy food choices for adults/youth. Selection of healthy foods for adults/youth. Benefits of physical activity (reduced overweight and obesity, reduced risk of diabetes, heart disease and cancer.) Physical activity recommendations for health for adults/youth. Identify factors that promote excessive weight gain and protect against childhood obesity. Understand the molecular mechanisms of lipid transport in the intestinal cell. Demonstrate the affects on calcium absorbtion and bone mass by weight loss
2	Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.
3	Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.
4	Taste Genetics, Obesity and Weight Loss - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.
5	Evaluation and Characterization of Novel Botanical Extracts for the Prevention and Treatment of Metabolic Syndrome and Diabetes - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

6	<p>Changing the Health Trajectory for Older Adults through Effective Diet and Activity Modifications - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.</p>
7	<p>Creation of Meals on Wheels Emergency Plan - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.</p>
8	<p>Kids in the Kitchen 4-H Summer Enrichment Program - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.</p>
9	<p>Lowering Sodium in Your Diet - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.</p>
10	<p>Best Practices in Early Care Education - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the</p>

	body processes fat.
11	Brigantine Homes Community Garden - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.
12	Smarter Lunchroom Report for Metuchen School District - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.
13	Delivery of Fresh Fruit and Vegetables to Home-bound Seniors - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.
14	4-H Summer Cooking Camp - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.
15	Healthy Living in Garfield - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.
16	Building Collaborations and Distributing Fresh Produce to Seniors and Urban Residents at the Farmer's Market - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.
17	Family and Community Health Sciences & 4-H - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

18	Eat Healthy Using My Plate - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.
19	Mechanisms of Dietary Lipid Assimilation in the Intestine - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.
20	Grow Healthy FCHS School Wellness Initiative - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.
21	Structure/Function Studies of Perilipin A - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.
22	Community Gardens in Union County - Fresh Produce for Local Food Pantries - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

Outcome #1

1. Outcome Measures

Short Term - Individuals gain awareness, knowledge, skills related to: Attitudes about healthy eating for adults/youth. Healthy food choices for adults/youth. Selection of healthy foods for adults/youth. Benefits of physical activity (reduced overweight and obesity, reduced risk of diabetes, heart disease and cancer.) Physical activity recommendations for health for adults/youth. Identify factors that promote excessive weight gain and protect against childhood obesity. Understand the molecular mechanisms of lipid transport in the intestinal cell. Demonstrate the affects on calcium absorbtion and bone mass by weight loss

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

N-3 Polyunsaturated Fatty Acids and Human Health and Disease

Research regarding omega-3 fatty acids and health is abounding, with corresponding increases in the number of foods touted for their omega-3 content. There is an increasing need: for reliable and timely information about omega-3s; and, clarity regarding misconceptions held by the public (and propagated in the news) with regard to their potential role in human health.

What has been done

An eXtension website has been developed as a means of providing this needed information, but questions remain regarding: the viability of some of the website's components, e.g., a podcast created to help shoppers identify and purchase omega-3 rich foods; whether or not the intended users (Extension professionals and the public) find the website appealing and easy to use; how the website can best be marketed to its intended users; and, whether or not pregnant women, who are one of the website's primary target audiences, will use the website to the extent that it improves their intake of omega-3 rich foods. An NJAES Extension Specialist evaluated the effect of an eXtension site on meeting the public's informational needs regarding omega-3 fatty acids. A

more specific focus was on some of the website components, particularly a grocery store podcast.

Results

Research findings suggests that eXtension website grocery shopping podcasts provide useable information regarding the health benefits of omega-3 consumption, and that they are likely a practical means for encouraging people to consume more ample amounts of omega-3s. This determination was made using data collected from 340 shoppers who listened to the podcasts as they shopped. Two- hundred fifty-one of the shoppers agreed to share their shopper loyalty cards with the research team which, in cooperation with A&P, enabled the researchers to review their store shopping receipts for six month prior to and six months after their exposure to the podcast. Most of the shoppers who participated in this study were white, women, and/or had at least a high school education. Statistical analyses revealed that more than half of the shoppers (59%) increased their purchases of n-3 rich foods. Further, the mean number of omega-3 rich food items they purchased increased significantly from 0.2 ± 0.7 pre-intervention to 3.6 ± 5.1 post-intervention ($t[172] = -6.9, P < 0.001$). These findings suggest that grocery store podcasts appear to be an effective means of nutrition education that nutritionists can use to assist their clients in making healthier purchases, but longer term studies should be done to assess if lasting change results from these types of interventions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #3

1. Outcome Measures

Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Assessing and Addressing Individual and Environmental Factors That Influence Eating Behavior of Young Adults

Young adults are at a uniquely increased risk for weight gain because of rapidly changing social situations that influence eating and exercise behaviors. Despite extensive efforts to promote weight management, these efforts only reach a small proportion of the population at risk and even effective programs promoting individual behavior change may have limited effectiveness in environments that promote weight gain. Research is needed to elucidate the combination of individual and environmental factors associated with unhealthy weight gain among college students.

What has been done

An NJAES Extension Specialist recognized that a myriad of environmental and individualized factors can influence eating behavior and lifestyle choices, tailored intervention strategies that have both an environmental and individual focus can begin to be developed. Additionally, identification of the individual factors and the necessary environmental factors to support the individual change is the first step in the development of indexes for comparisons and benchmarking to support policies and programs for behavior change on college campuses and communities. This project, a collaboration among multiple institutions, uses established research techniques (the PRECEDE-PROCEED model for community-based participatory research) with communities of young adults to: 1) Develop instrument(s) and strategies to assess and evaluate individualized factors associated with eating behavior and health outcomes; 2) Refine and validate environmental assessment instruments for evaluating environmental factors that influence eating behavior and health outcomes; 3) Explore mechanisms of interaction between the identified individualized factors and environmental factors in influencing eating behavior; and 4) Use the findings to develop a Healthy Campus Index that can be used by higher education institutions around the nation to determine the how supportive their campuses are of promoting healthy weight among their students as well as identify areas of strength and areas needing improvement so that campuses can make meaningful changes that better support young adult health.

Results

In collaboration with colleagues from other universities, an NJAES Extension Specialist gathered and analyzed data from the newly completed Young Adult Eating and Activity for Health (YEAH) program, an 18 month on-line intervention program implemented and tested at Rutgers and 14 other universities. Participants in the USDA-funded YEAH intervention significantly increased fruit and vegetable intake, decreased percent of calories from fat, and improved self-instruction and self-regulation for mealtime behavior. An analysis of YEAH data to assess the effect of cognitive load on student health outcomes determined that young adults with high cognitive loads were significantly more likely to have greater routine restraint, compensatory restraint,

sensitivity/susceptibility to external cues, and emotional eating compared to low cognitive load participants. Finding indicates that stress management may help ameliorate behaviors associated with excessive weight gain. The study team also created novel scoring methods to measure physical activity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #4

1. Outcome Measures

Taste Genetics, Obesity and Weight Loss - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Taste Genetics, Obesity and Weight Loss

In the last 30 years there has been a growing epidemic of obesity in the population but current interventions have not been successful in stemming this tide. Taste sensitivity to the bitter compound 6-n-propylthiouracil (PROP) is a common genetic trait that is a marker for food preferences and eating habits. Studies have shown that women who are genetically taste blind to PROP (i.e., non-tasters) habitually consume diets that are higher in added fats and sweets and higher in energy content than PROP tasters or super-tasters. These dietary differences could explain why non-taster women, are heavier than super-taster women. These data suggest that in the context of obesity, non-taster women would be more successful following a low-carbohydrate diet that does not restrict calories and fat content. Super-taster women would be more successful following a low-fat diet because they are less sensitive to reductions in dietary fat content and they typically consume fruits and vegetables that are emphasized in this diet.

What has been done

An NJAES researcher investigated individual differences in genetic sensitivity to bitter taste (PROP tasting) as a biological marker for dietary intake and obesity. Obese women who meet the study criteria are divided into ?super? PROP tasters and non-tasters. Each ?taster? group is randomized into two groups for a six-month intervention designed to test the effectiveness of specific diet regimens (a low-fat-diet and a low carbohydrate diet). Each group attended weekly sessions during months 1-3 of the program, and then met every other week for months 4-6. Dietary targets for the LF group are 1,200-1,500 kcal/day and < 28% fat. The target for the LC group is < 50 g carbohydrate/day; there is no calorie target for the LC group. The physical activity goal gradually increases to 40 min/day at least 5/days per week. Four-day diet records were collected at baseline, 3-months and 6-months and were analyzed for energy intake, and macronutrient intake (% protein, fat and carbohydrate intake). Body weight was also measured at the same intervals. Compliance assessments included attendance at meetings, keeping a weekly food log and meeting the weekly physical activity goal. Eating attitudes measures (i.e., dietary restraint, disinhibition and hunger) were also collected at baseline, 3 and 6 months.

Results

Results reported here are preliminary results based on the 41 women who completed the 6-month intervention. Mean weight loss for the current cohort was 8.0 + 1.1 kg, which is within the targeted range of 0.25-0.5 kg /wk. The overall dropout rate was 16.3%. Interim results revealed that at 3-mo, all participants in the LC group lost more weight than those in the LF group ($p < 0.03$), but this difference dissipated at 6-mo. Examination of the sub-groups using paired-comparison tests revealed that non-tasters in the LC group lost marginally more weight at 6-mo than non-tasters in the LF group ($p < 0.08$). Weight loss was high to date in this trial (8.5% loss of baseline body weight) and attrition was low (16%). The pattern of weight loss we observed (more early weight loss in the LC group relative to the LF group that disappeared at the end of the trial) is consistent with findings from the literature. Current data are consistent with the hypothesis that non-taster women following the LC diet will lose more weight than non-taster women following the LF diet. The researchers expected that non-taster women following the low-carbohydrate diet would show greater dietary and behavioral adherence; higher dietary restraint; and lower disinhibition and hunger than non-taster women following the low-fat diet. These outcomes would identify key behaviors and eating attitudes that optimize weight loss when participants are matched with a diet corresponding to their genetically-determined food preferences. Contrary to expectations, measures of behavioral compliance were high in all subgroups including attendance at sessions (79-97% across groups) and keeping a daily food log (71-93%). Compliance with weekly physical activity goals was lower than for the other compliance measures, but was similar across groups (48-64%). Dietary restraint scores rose, and disinhibition and hunger scores fell in

all participants at 3-months, and remained steady through the end of the trial (all p-values = 0.01-0.001 for baseline vs. 3-mo and 6-mo scores for all three measures). Thus, measures of behavioral compliance were high, consistent with positive treatment outcomes. Increasing dietary restraint and decreasing disinhibition were associated with successful weight loss.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #5

1. Outcome Measures

Evaluation and Characterization of Novel Botanical Extracts for the Prevention and Treatment of Metabolic Syndrome and Diabetes - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Evaluation and Characterization of Novel Botanical Extracts for the Prevention and Treatment of Metabolic Syndrome and Diabetes

The occurrence of type 2 diabetes continues to soar to epidemic proportions reaching almost 8% (23.6 million) of the population in the U.S. alone. Another 57 million Americans have prediabetes, defined by an impaired fasting glucose values as a result of insulin resistance. Insulin resistance is a key pathophysiologic feature of the "metabolic syndrome" and is strongly associated with co-existing cardiovascular risk factors and accelerated atherosclerosis. Due to the clinical consequences associated with insulin resistance in subjects with metabolic syndrome and type 2 diabetes, clinical regimens directed at increasing insulin sensitivity in vivo remain one of the most desirable goals of treatment. Although it is well established that lifestyle modification can improve insulin resistance and effectively improve many of the risk factors associated with metabolic syndrome, the success of maintaining lifestyle changes in humans over a chronic period is poor. Therefore, strategies to improve insulin resistance by pharmacological means have represented the traditional approach for clinical medicine. However, because of the widespread use of dietary supplements by the general public, nutritional supplementation with the use of botanicals that effectively increase insulin sensitivity represent a very attractive and novel approach for future studies designed to intervene in the development of metabolic syndrome.

What has been done

NJAES researchers, in collaboration with researchers at three other institutions, are conducting a comprehensive analysis of the hypothesis that extracts from *Artemisia* sp. and *Rubus* improve insulin sensitivity, as well as isolating and characterizing the active components of these extracts based on the in vitro activities in muscle cells and adipocytes. Finally, TNO Intestinal Model (TIM) apparatus that simulates human gastro intestinal tract will be used to assess the bioavailability of active components in these extracts.

Results

Recent work on the characterization of *Artemisia* botanicals for improving insulin sensitivity examined how the active compounds from an extract of *Artemisia dracunculus* L. called PMI-5011 can be formulated with a food matrix such as soy protein to significantly improve the parameters related to the overall effectiveness of the botanical in future clinical work. A large commercial batch of *Artemisia dracunculus* (280 kg) was grown in greenhouse conditions and shipped to LSU (frozen) for processing into clinical materials. The polyphenols from *Artemisia dracunculus* were formulated with soy protein isolate (5011 Nutrasorb) and administered as a food for clinical testing (confirmed by experts at the FDA). Using the TIM model of the upper gastrointestinal tract of humans, the bioaccessibility of the active compounds of *Artemisia*, specifically the chalcone, 2,4-dihydroxy-4-methoxydihydrochalcone (DMC-2), from the soy formulation were determined to be similar to the bioaccessibility of the extract formulated with a commercial excipient and better than the extract alone. The 5011 Nutrasorb had higher relative bioavailability than the extract alone. This formulation was provided to Project 1 investigators and is currently in clinical testing. *Artemisia dracunculus*, *santolinifolia* and *scoparia* were continuously cultivated at Rutgers. The plants were processed into extracts and incorporated into diets for animal studies to determine their effect of insulin signaling pathways. Each of the plants produced a comparable chemical fingerprint. *Artemisia santolinifolia* and *scoparia* were fractionated using FCPC and subfractionated using HPLC in the same manner as was performed for *A. dracunculus* and individual compounds from the active fractions were preliminarily identified using LC-MS as described in previous project reports. A validation study was also initiated for the PMI-5011 project to quantify the DMC-2 in samples of PMI-5011, the quantification of DMC-2 in the plasma of mice treated with PMI-5011 and the synthesis of DMC-2 for use as a chemical standard. Ten

grams of DMC-2 were synthesized to greater than 99% purity and the validation analyses of extracts and plasma are ongoing.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #6

1. Outcome Measures

Changing the Health Trajectory for Older Adults through Effective Diet and Activity Modifications - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Changing the Health Trajectory for Older Adults through Effective Diet and Activity Modifications

There is a strong connection between the diet, metabolism, aging, the biological clock (circadian rhythm) and genome stability. A healthy diet consisting of whole grains, fruits and vegetables provides a healthy supply of antioxidants that promote healthy metabolism, proper functioning clock and genome integrity. These combined factors help reduce many adverse health conditions such as cardiovascular disease and cancer, and may reduce age-related diseases like macular degeneration.

What has been done

An NJAES researcher is working to identify effective biomarkers and other indicators that reflect improvement in diet (fruit, vegetables, and whole grains) and physical activity and chronic disease risk in older adults. This researcher is trying to identify two effective biomarkers that reflect improvement in diet and disease prevention. The first is rate-of-change in telomere length and the second is a BMAL1 chromatin immunoprecipitation (ChIP).

Results

The researchers have optimized the different assays and generated the necessary materials. Using zebrafish as a model system (zebrafish and human telomeres are nearly identical) we have developed a quantitative PCR assay to measure telomere length. The goal is to eventually be able to use this in combination with DNA isolated from a cheek swab to measure the relative genome age and determine how diets rich in antioxidants (fruits, vegetables and whole grains) protect telomeres. The next step is to develop an easy assay that can measure BMAL1 binding to the telomeres to see if a healthy diet can improve the protective measure bestowed by the circadian clock. Thus far, the research has generated an anti-BMAL1 antibody and performed some preliminary tests of the ChIP. Repeated testing shows BMAL1 binding to the telomeres.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #7

1. Outcome Measures

Creation of Meals on Wheels Emergency Plan - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Creation of Meals on Wheels Emergency Plan

Meals on Wheels in Greater New Brunswick (MOWGNB), like most service providers in central New Jersey, was greatly affected by Sandy. After encountering many problems during this storm, they determined that an emergency plan was important for them to be able to best serve their clients.

What has been done

In consultation with Board members, program staff of MOWGNB and Elijah's Promise, the New Brunswick Fire Department, the Middlesex County Office on Aging and Disabled Services, and Meals on Wheels Association of America, an Emergency Preparedness Plan was prepared. The plan was officially voted on and approved by the MOWGNB Board, and is currently being enacted.

Results

The MOWGNB Board adopted the plan and is working to enact it. The New Brunswick and Highland Park Fire Departments now keep up-to-date lists of the most vulnerable clients, and they have agreed to serve meals to those clients in unforeseeable emergencies, when MOWGNB is not able to operate.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #8

1. Outcome Measures

Kids in the Kitchen 4-H Summer Enrichment Program - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Kids in the Kitchen 4-H Summer Enrichment Program

According to health rankings released by the Robert Wood Johnson Foundation and the Population Health Institute from the University of Wisconsin, Cumberland County is the poorest county in the state and the least healthy county in New Jersey. Second only to neighboring Salem County in adult obesity rankings, Cumberland County is composed of many wide open spaces, little public transportation, high rates of unemployment and a high undocumented population. Children can serve as catalysts for family change, encouraging healthy behaviors through sharing their learning with loved ones.

What has been done

A three day summer enrichment program was designed to engage youth and their families in developing awareness needed to make better food choices. The camp focused on nutrition, food preparation, food safety and manners, the program engaged learners who have completed grades 3 ? 7 in planning, preparing and serving a luncheon on Friday for the participant?s parents and caregivers.

Results

A pre-posttest survey were utilized as evaluation tools in the program. In addition a process evaluation was conducted to gain insight into youth's opinions on the logistics of the program. Evaluation revealed the following: 95% of youth surveyed demonstrated an increase in knowledge and skills in each of the three program domains: manners, food preparation skills and kitchen chemistry. 84% indicated they had learned ?some? or "lots" about the effect of yeast on food. 89% stated they had learned ?some? or ?a lot? about setting the table properly 95% learned ?some? or "lots" about measuring ingredients Participants stated "The only thing I did not like was that it was only 3 days" "I loved everything. I would like to be a cook someday" "I learned about cooking, cutting properly, safety and proper place setting." "It was so much fun!" Ways in which youth stated they can use this information in the future included teaching others, preparing a meal for family, volunteering at a soup kitchen or senior center and in chosen career paths.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #9

1. Outcome Measures

Lowering Sodium in Your Diet - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Lowering Sodium in Your Diet

High blood pressure and heart disease are linked to obesity. Lowering blood pressure is important for many adults to improve their risk factors linked to heart disease, stroke.

What has been done

Power point presentations were developed on High Blood Pressure: What Can I Do? and the DASH Eating Plan to help consumers cook with less salt and control their risk for hypertension. Programs range from 1-2 hrs. in length with presentation and Q & A were presented to Adults, Seniors, Health Care Professionals and Plainfield School Nurses.

Results

Comparing learning of 'before and after class?', 80% of participants said they would almost always read food labels before purchasing food, they would purchase foods with lower sodium levels, learn to eat foods with less sodium and most would not cook with salt and 48% said they would substitute herbs, spices or other flavorings for salt when cooking.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #10

1. Outcome Measures

Best Practices in Early Care Education - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their

protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Best Practices in Early Care Education

New Jersey ranks very high in rates of childhood obesity, particularly in preschool obesity in underserved communities. Additionally, in some communities access to fresh fruits and vegetables is limited resulting in nutritionally unbalanced diets. Childhood obesity prevention and reduction efforts must involve the environments in which the children live, play, and go to school. The earlier children learn about the importance of healthy eating and physical activity the more likely these habits will be incorporated into a healthy lifestyle.

What has been done

The Department of Family & Community Health Sciences, in partnership with the NJ Department of Agriculture, successfully obtained a USDA Team Nutrition Training Grant that provided training for NJ foodservice professionals of the National School Lunch Program (NSLP) and Child and Adult Care Feeding Program (CACFP) on implementing the 2010 Dietary Guidelines for Americans, applying for the HealthierUS School Challenge, maximizing the use of USDA Foods, and meeting the requirements for the new meal patterns for school meals mandated by the Healthy Hunger Free Kids Act of 2010, with emphasis on local foods and Farm to School Initiatives.

Results

FCHS Educators created 4 data collection and evaluation tools for the child care sites: webinar evaluations; a Let's Move Child Care Checklist (LMCC) Quiz summary; food tasting records; and a final participant survey. Highlights of these evaluation tools follow. Webinars: Nearly 100% of viewers responded that the webinar format and length were effective and appropriate. Wellness Policies webinar 98% of viewers who completed the evaluation responded that they will participate in their center's wellness policy development. After viewing the "Win with Tastings in Early Care Centers" webinar, 92% of viewers who completed the evaluation agree or strongly agree that they feel confident in their ability to plan and conduct food tastings. Of the 34% who did

not plan to conduct a food tasting in the 2 months following the webinar, 57% cited food allergy concerns and 43% cited time as a barrier. After viewing the Role-Modeling webinar 98% of viewers who completed the evaluation agree or strongly agree that they feel confident in their abilities to role model behaviors encouraging children to participate in physical activity; drink more water; and eat healthy foods, especially more vegetables and fruits. After viewing the Choosing Recipes for Healthy Kids webinar, 96% of viewers who completed the evaluation agree or strongly agree that they feel confident in their ability to follow food safety and food allergen principles when providing meals or snacks to children. 98% felt able to identify and select whole grain items when providing meals or snacks to children. 73% plan to utilize local farmers when possible for local ingredients. Upon completion of a Final Participant Survey, child care staff was asked to indicate in which way(s) the Grow Healthy TN project has impacted their center. The most frequently cited responses were: Implemented more nutrition activities; implemented more garden activities; Increased parent involvement in center wellness; increased staff involvement in center wellness; implemented more physical activity; and improved the healthfulness of the center's menu. The Final Participant Survey also yielded these key findings: 90% of respondents reported that the LMCC Checklist process increased their awareness about center wellness; identified priority areas for wellness improvements; helped develop a wellness action plan and increase compliance with CACFP guidelines. 80% now offer water freely indoors and outdoors; 70% have added more fruit to the menu; 60% have added more vegetables other than fried potatoes. 90% of respondents reported that the curricula selected helped them incorporate nutrition, physical activity and gardening into their program. 100% reported that the garden helped them promote nutrition education in the classroom and 80% indicated that the garden helped them conduct vegetable and fruit tastings as well as increase parent involvement.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #11

1. Outcome Measures

Brigantine Homes Community Garden - Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Brigantine Homes Community Garden

Brigantine homes is a low income housing community. This part of Atlantic City is a food desert. It is also is a high crime area where a lot of youth programs do not stay. We are serving a high Hispanic and black population with limited youth programming and troubles with food security. We had 23 youth participate in this program along with 2 adult mentors. 18 Hispanics and 5 African Americans youth.

What has been done

A permanent garden structure was built by a -kind donation from Atlantic county. We used this garden to teach the youth about Gardening and healthy living. Also adults and youth volunteered to tended to the garden and keep it safe. We even had the Mayor of Atlantic City come down to do the grand opening. We used the Master Gardeners curriculum to teach the youth and the grown vegetables were given to the residents.

Results

87% of the youth changed the attitude towards gardening. 82% of the youth have a better understanding of food security. Also what was not measured in the evaluation was the pride and ownership the community including the youth and adults had when they were able to harvest the garden.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

724 Healthy Lifestyle

Outcome #12

1. Outcome Measures

Smarter Lunchroom Report for Metuchen School District - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Smarter Lunchroom Report for Metuchen School District

The Metuchen School District cafeterias provide healthy foods, but students were not always making healthy choices.

What has been done

At the request of the Metuchen Wellness Committee, the three District cafeterias were observed during multiple lunch periods. Using the Smarter lunchroom approach (Hanks, Just & Wansink (2012), specific recommendations about availability and placement of healthier and less healthy foods and beverages were provided for each cafeteria. Hanks, Andrew S., Just, D. & Wansink, B. (2012). Smarter Lunchrooms Can Address New School Lunchroom Guidelines and Childhood Obesity. The Journal of Pediatrics, Volume 162, Issue 4, 867 ? 869.

Results

All three cafeteria environments were changed as a result of the report, cafeteria advertising was changed, as were the placements of food and beverages. Most, but not all, of the recommendations were adopted resulting in students more frequently making healthy food choices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #13

1. Outcome Measures

Delivery of Fresh Fruit and Vegetables to Home-bound Seniors - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Delivery of Fresh Fruit and Vegetables to Home-bound Seniors

For aging adults, eating adequate amounts of fruits and vegetables can help prevent or manage chronic disease and promote quality of life. Homebound seniors, and particularly low-income homebound seniors, may have difficulty accessing and affording fruits and vegetables, even in urban settings where community-based efforts to improve access and affordability are present. This project sought to address these issues by providing registration in a county run program to increase the affordability of fresh produce, and by delivering fresh produce to homebound seniors who receive home-delivered meals (HDMs).

What has been done

To address the issue of limited access and affordability among these at-risk seniors, two joint interventions were launched between May and August 2014. The first intervention involved registering 13 low-income, home-delivered meal (HDM) participants for the Senior Farmers? Market Nutrition Program (SFMNP). SFMNP is a federal nutrition assistance program that aims to increase fresh, local produce affordability and to support local farmers? markets, roadside stands, and community supported agriculture programs. Of approximately 60 HDM recipients approached, 13 who were interested in the program and eligible based on income were successfully enrolled. The second intervention established produce home-delivery for approximately 60 HDM participants, including those who were registered for SFMNP. The New Brunswick Community Farmers? Market supplied all of the produce, most of which was locally grown. During the intervention, four produce home-deliveries were made, with 214 produce bags delivered.

Results

Overall, most participants interviewed reported that they ate the fruits and vegetables delivered to them, and that their fruit and vegetable consumption increased as a result of the program. In addition, our intervention raised awareness of the Senior Farmers Nutrition Program (SFMNP), and 13 individuals were successfully enrolled in the SFMNP. Over 95% of the SFMNP vouchers were redeemed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #14

1. Outcome Measures

4-H Summer Cooking Camp - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

4-H Summer Cooking Camp

Urban youth experience unique challenges when it comes to health living. By educating youth on nutrition and how to prepare healthy options we may reverse the trend of poor health and childhood obesity.

What has been done

Sixty inner city youth participated in the program. We began with "What's in a Kitchen" (because reading levels varied we had items with numbers by them and the students had to match the item to the number), then onto common weights and measures (whole and halves were easy the challenge was fractions), finally we introduced proper hand washing (two sinks one for food preparation and the other for hand washing). The students were placed in groups of five each day their jobs changed, table setter, recipe reader, ingredient gather, food preparation and table clearer. Table manners were incorporated (sitting down-no talking with food in your mouth- using a napkin). Each day the youth made a different non-carbonated fruit drinks from fresh fruits. Many youth really enjoyed the "naturally" sweeten beverages. The "Get Moving Get Healthy" activity stations and lessons were also incorporated in the sessions. To reinforce what was learned nutrition bingo, name that nutrient and other food related games were played. Each participant received a cookbook of all of the recipes that were made, so they could make them at home.

Results

The program was designed for youth in grades 4th-8th and who were attending select summer day camp programs throughout the city. We required the participants participate for the entire week. The youth often wanted the program to be extended and some have joined existing Mercer County 4-H clubs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food

702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #15

1. Outcome Measures

Healthy Living in Garfield - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Healthy Living in Garfield

Currently, the number of overweight and obese youth in New Jersey is higher than the national average. By educating young people on nutrition, fitness and positive lifestyles, we can help them to create healthy habits and reverse the trend of poor health. In urban areas, youth experience unique obstacles when it comes to healthy living. Fast food and corner stores/bodegas offer inexpensive snacks and meals that are unhealthy and easily accessible. Neighborhoods are often not safe for outdoor activities and sports. Cultural differences in meals will cause imbalance in food group distribution (too much grains or meats, not enough vegetables). The youth in the city of Garfield experience some or all of these obstacles.

What has been done

The instructor used the Get Moving-Get Healthy with New Jersey 4-H curriculum in addition to the Cornell University Choose Health curriculum. Youth attended a one hour session once per week

for six weeks. The healthy living lessons were hands-on, and were followed by team building activities or games, designed to get the participants out of their seats and moving around. The goals of the program were for youth: To understand the importance of proper nutrition and physical activity. To learn ways to make healthy eating and physical activity a part of their daily lives. To change eating habits by making healthier food choices. To include physical activity in their daily lives. To share what they learned with their parents/caregivers and siblings so they could make healthy choices/changes together. To ultimately live longer and healthier lives. The program had three primary areas of focus. 1. Learning the "Choose My Plate" model, including the food groups and their individual calorie levels. 2. Learning about portion sizes and how to identify them. 3. The importance of daily physical activity, and ways to make it fun and easy.

Results

64 evaluations were collected and the results show the program was successful and had a positive impact on the youth participants. As a result of participating in this 4-H healthy living program: 95% of participants strongly agree or agree that they learned the foods they should eat every day. 92% of participants strongly agree or agree that they learned what makes up a balanced diet. 91% of participants strongly agree or agree that they learned why it is important to eat a healthy diet. 94% of participants strongly agree or agree that they learned how to make healthy food choices. As a result of participating in this 4-H healthy living program, youth now take the following actions: 72% strongly agree or agree that they eat more fruits and vegetables. 64% strongly agree or agree that they eat more whole grains. 61% strongly agree or agree that they eat less junk food. 81% strongly agree or agree that they drink more water. 81% agree that being active is fun. 94% agree that being active is good for them. 94% agree that physical activity will help them stay fit.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #16

1. Outcome Measures

Building Collaborations and Distributing Fresh Produce to Seniors and Urban Residents at the Farmer's Market - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Building Collaborations and Distributing Fresh Produce to Seniors and Urban Residents at the Farmer?s Market

Urban seniors may have difficulty accessing and affording fresh fruits and vegetables. Affordability is also a major obstacle.

What has been done

Union County Freeholders, NJ Dept. of Agriculture and the Senior Meals Coordinator along with Rutgers Cooperative Extension FCHS Educator, SNAP-Ed Supervisor and Staff, Ag agent, Master Gardeners along with Elizabeth, Plainfield, Roselle, Rahway, WIC in Elizabeth and Plainfield supported bringing Fresh Produce to Farmers Markets at various sites in Union county fostering a collaborative effort of Rutgers Cooperative Extension, county and city agencies with NJ farmers. To provide nutrition education along with distribution of vouchers for free produce at the participating markets. Vouchers (\$ 20) for free produce for seniors were distributed in Union County. Three farmers visited 9 towns to deliver produce to Union County senior residents. Nutrition education was provided by SNAP-Ed at the sites and SNAP-Ed assists with distributing vouchers with Union County Division on Aging Staff.

Results

Outcomes/Impacts: In FY 2014?Eighteen thousand \$5.00 vouchers worth \$90,000 were given to eligible seniors in Union County to purchase Jersey Fresh fruits and vegetables as part of the WIC Senior Farmers Market program. Seniors get a maximum of 4 vouchers at \$5.00 each or a total of \$ 20 per senior. Transportation to the farmer?s markets is provided by county paratransit system. Besides providing urban seniors with fresh fruits and vegetables, farmers joined a new customer base.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components

703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #17

1. Outcome Measures

Family and Community Health Sciences & 4-H - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Family and Community Health Sciences & 4-H

At a time when childhood obesity and chronic disease rates are exceedingly high, the need for programming emphasizing healthy living is great. Providing programming that focuses on healthy food choices and the importance of physical activity to youth, gives them important information that can shape their behavior patterns during their most formative years, hopefully leading to a lifetime of healthy decision making.

What has been done

School Enrichment Healthy Living Programs These are part of the Get Moving ? Get Healthy NJ initiative of 4-H and Family & Community Health Sciences. The Make Your Plate Great program teaches participants how to build healthy eating habits using the new ChooseMyPlate food icon. Participants find out what different foods do for the body and make a healthy snack. Get Moving - Get Healthy NJ teaches the importance of eating healthy food and the benefits of daily physical activity. Activities include cardio, strength building, flexibility training, basic yoga poses and

movement activities that help participants strengthen their muscles and increase flexibility. Group poses encourage cooperation and meditation helps participants become aware of the mind-body connection. All 4-H Clubs are encouraged to elect a Health Officer who serves as an advocate for health at all club meetings by sharing healthy facts or leading activities that promote healthy living.

Results

At the conclusion of the Make Your Plate Great program, participants expressed their desire to share information learned with their family members. Teachers of participants also reported that they observed an increase in healthy snacks being brought to school. Nine new Health Officers were trained in Somerset County. Clubs with Health Officers integrated health tips and topics into their general club meetings, encouraging their peers, leaders, and family members to make better choices in their daily lives. Some Health Officers shared information that related to their project areas, such as horse health and safety when working with electronics/circuits.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #18

1. Outcome Measures

Eat Healthy Using My Plate - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
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2014

0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Eat Healthy Using My Plate

Providing programming that focuses on healthy food choices and physical activity is essential to address the major health crises of childhood obesity.

What has been done

ChooseMyPlate programs were developed with power point presentations, evaluations and handouts. These included: ?My Plate for Educators 2014? for training teachers; ?ChooseMyPlate for seniors?, ?My Plate Makeovers? ?Healthy Food for Kids? and ?10 Tips for Eating Healthy? for adult and parent groups. All workshops, trainings and presentations include post/pre evaluations and handouts.

Results

Posttest shows planned change in foods consumed and change in attitudes toward healthier options. Post-Pre for MyPlate N= 435 adults Pre Post Set goals for changing my health behavior 51% 78% Buy more healthy than unhealthy food 48% 75% Know a balanced lifestyle includes good nutrition and physical activity 65% 74% Exercise 30 minutes MOST days 62% 75% Make sure my kids exercise at least 60 minutes per day 60% 74% Know and follow MyPlate when planning meals and snacks 62% 76% Eat salads and sufficient fruit/veg daily 41% 58% Drink 6-8 cups fluids daily 52% 81% Watch my portion sizes 56% 82% Eat a healthy breakfast EVERY day 31% 52% Pack a healthy lunch daily 30% 49% Drink at least 3 cups of 1% or non-fat milk daily (or substitute food/beverages) 31% 46%

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #19

1. Outcome Measures

Mechanisms of Dietary Lipid Assimilation in the Intestine - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Mechanisms of Dietary Lipid Assimilation in the Intestine

Free fatty acids (FA) and monoacylglycerol (MG) are the hydrolysis products of dietary triacylglycerol (TG). They constitute not only a major source of calories, but are also precursors of many biologically active molecules and are incorporated as structural components of cellular membranes. The mechanisms which regulate the uptake and intracellular movement of FA and MG in intestinal cells remain largely unresolved.

What has been done

The ultimate goal of this work is to understand and thereby be able to regulate the influx, efflux, and intracellular targeting of FA and MG. This research will define the mechanisms by which dietary fat is taken up and processed by intestinal cells, and will provide an understanding of how the uptake of lipid can be regulated-either to decrease uptake, as in the case of caloric reduction, or to increase uptake, in the case of nutrient malabsorption. Such an understanding will not only enhance our knowledge of the basic mechanisms of utilization of a major nutrient, triacylglycerol, but will enable more effective regulation of net intestinal lipid uptake. This will have important implications for the treatment of obesity and malabsorptive disorders, and will assist in the development of effective enteral drug delivery systems.

Results

We studied the roles of the enterocyte fatty acidbinding proteins (FABPs), and showed for the first time that they have clearly distinct functions in the intestine. For example, mucosal lipid metabolism was differentially modified, with significant decreases in FA incorporation into triacylglycerol (TG) relative to phospholipid (PL) in IFABP^{-/-} mice, while LFABP^{-/-} mice had reduced monoacylglycerol (MG) incorporation in TG relative to PL, and reduced radiolabeled monoacylglycerol (MG) incorporation in TG relative to PL, as well as reduced FA oxidation. Interestingly, striking differences were found in whole body energy homeostasis: LFABP^{-/-} mice fed high-fat diets became obese relative to WT, while IFABP^{-/-} mice displayed an opposite, lean, phenotype. Fuel utilization followed adiposity, with LFABP^{-/-} mice preferentially utilizing lipids, and

IFABP^{-/-} mice preferentially metabolizing carbohydrate for energy production. Changes in body weight and fat may arise, in part, from altered food intake; mucosal levels of the endocannabinoids 2-arachidonoylglycerol (2-AG) and arachidonylethanolamine (AEA) were elevated in LFABP^{-/-}, perhaps contributing to increased energy intake. This direct comparison provides evidence that LFABP and IFABP have distinct roles in intestinal lipid metabolism; differential intracellular functions in intestine and in liver, for LFABP^{-/-} mice, result in divergent downstream effects at the systemic level. We also discovered and helped elucidate the function of small intestinal monoacylglycerol lipase (MGL) by generating transgenic mice that over-express MGL specifically in small intestine (iMGL mice). After only 3 weeks of high fat feeding, iMGL mice showed an obese phenotype; body weight gain and body fat mass were markedly higher in iMGL mice, along with increased hepatic and plasma TG levels compared to wild type littermates. The iMGL mice were hyperphagic and displayed reduced energy expenditure despite unchanged lean body mass, suggesting that the increased adiposity was due to both increased caloric intake and systemic effects resulting in a hypometabolic rate. The presence of the transgene resulted in lower levels of most MG species in intestinal mucosa, including the endocannabinoid 2-arachidonoyl glycerol (2-AG). The results therefore suggest a role for intestinal MGL, and intestinal 2-AG and perhaps other MG species, in whole body energy balance via regulation of food intake as well as metabolic rate.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #20

1. Outcome Measures

Grow Healthy FCHS School Wellness Initiative - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Grow Healthy FCHS School Wellness Initiative

Childhood obesity continues to be a concern in America, with roughly more than one third of children and adolescents overweight or obese. Health experts continue to emphasize the importance of making changes to policy and the environment affecting children and families to promote healthy lifestyles. Providing a healthy school environment is a key strategy, one which emphasizes provision of healthy foods served/sold on campus, adequate physical activity, role modeling of healthy behaviors by school adults, and parent involvement in school health. The Healthy, Hunger Free Kids Act of 2010 reinforced nutrition guidelines for school meals and competitive foods, as well as bolstered school wellness policies and practices, through school wellness councils, and employment of evidenced-based practices to assess their school wellness environments. This allows unbiased action planning and sustainable and systematic change.

What has been done

A comprehensive and ongoing school wellness partnership has developed over the past several years between FCHS and School Districts (serving Pre-K through 8th Grade students) throughout the state. Students participate in food, nutrition and edible garden programming, including vegetable taste testing?s to identify new vegetable options to achieve USDA vegetable subgroup requirements in school cafeterias. ?School Staff: teachers, nurses and administrators participated in professional development workshops to complete the CDC School Health Index (SHI) assessment tool to develop school wellness plans, and identify strategies to enhance nutrition and physical activity in their schools & curricular integration strategies for school food and garden activities. ?Training ? FCHS Wellness Champions: volunteers were trained to teach supplementary food/nutrition lessons in schools, serve on school wellness councils, and provide support to school wellness activities throughout the school year. ?Students participated in Youth Advisory Councils to conduct a wellness assessment via the Students Taking Charge assessment and develop plans to address identified needs in areas of nutrition & physical activity.

Results

Changes in Knowledge ? Surveys indicate improved understanding and awareness of key school nutrition and wellness issues and strategies to enhance school wellness and nutrition in each target audience. Changes in Condition ? Follow-up surveys and outreach indicate a number of changes have resulted: Built 3 new school gardens and enhanced/expanded 4 existing school gardens, making them integral components of the school environment. New vegetables have been added to school lunch menus, based on results of student taste-testing?s, enabling school nutrition professionals to increase the variety of vegetables served and better meet USDA vegetable subgroup requirements. Schools developed SHI assessments and developed wellness implementation plans and strategies. YACs developed youth-led projects to increase physical activity during indoor recess. YACs developed youth-led projects to increase healthy offers in the cafeteria o FCHS Wellness Champions are teaching nutrition lessons in elementary school

classrooms, leading after-school food & garden clubs and supporting school garden and wellness council projects.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #21

1. Outcome Measures

Structure/Function Studies of Perilipin A - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Structure/Function Studies of Perilipin A

Obesity is a growing problem in the U.S. and most other countries of the world. To develop effective treatments for obesity, it is critical to understand the biology of fat storage in adipose tissue.

What has been done

A NJAES researcher investigates the functions of a protein, perilipin, which is found in fat storing cells in adipose tissue. Perilipin is the major protein surrounding the fat storing structures called lipid droplets. Perilipin functions to control the amount of fat stored during feeding are released when energy is needed by the body. Working with collaborating scientists in Austria, we have demonstrated that phosphorylation of serine 239 of (mouse) CGI-58 is important for release of CGI-58 from the perilipin scaffold during the stimulation of lipolysis. This phosphorylation neither increases nor impairs the interaction of CGI-58 with ATGL, or co-activation of lipolysis. Additionally, we have continued to characterize a mutation of CGI-58 (His82Arg) that is responsible for a neutral lipid storage disorder in humans. We have found that the mutation blocks the co-activation of ATGL in vitro, but does not impair the physical interaction of mutated CGI-58 with ATGL, or the recruitment of these proteins to lipid droplets.

Results

NJAES researcher has gain of knowledge that will help the research community to better understand how adipose tissue controls fat storage and release. We have gained better understanding of how perilipin works to control fat metabolism in adipose tissue by controlling the interaction of various perilipin-binding proteins with lipid droplets, the major fat storing structures in adipocytes (fat cells). Changes in knowledge for 2014 include new discoveries that the protein kinase A-mediated phosphorylation of serine 239 of mouse CGI-58 is important for efficient release from a binding site on perilipin 1. This adds to prior knowledge that phosphorylation of serine residues at positions 492 and 517 of mouse perilipin 1 facilitate the release of CGI-58 from lipid droplets into the cytoplasm. This release of CGI-58 enables interaction of CGI-58 with ATGL and the activation of lipolysis. The ultimate outcome of increasing adipose lipolysis is to release fatty acids into circulation for uptake by peripheral tissues for metabolism to drive ATP synthesis. These findings increase the knowledge of basic scientists regarding the biology and function of adipocytes, and the control of whole body energy homeostasis in animals. Maintaining balance in energy metabolism is critical to avoid pathological complications of obesity and insulin resistance.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #22

1. Outcome Measures

Community Gardens in Union County - Fresh Produce for Local Food Pantries - Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Community Gardens in Union County - Fresh Produce for Local Food Pantries

US Census data for Union County NJ, indicates that 10.8 % of the population is living below the national poverty level (2009-2013). According to the NJ Anti-Hunger coalition, www.njahc.org, a USDA study of NJ food stamps recipients jumped from 414,500 in 2007-09 to 622,022 in 2010. The number of NJ households experiencing food insecurity increased from 7.7% of the population in 2004-06 to 11.5% in 2007 - 09. The Anti-Hunger coalition lists 27 food pantries in Union County as resources for families and individuals in need of food. Donations of fresh vegetables to food pantries give families access to healthy food and allows pantries to use financial resources to purchase other perishable items such as milk and meat.

What has been done

RCE of Union County has been addressing the food security issue on two fronts: starting community gardens and providing local food pantries with produce for distribution. Schools and community organizations look to NJAES Cooperative Extension for guidance on starting and managing school and community gardens. The Master Gardeners of Union County have been providing local food pantries with fresh produce since 2002. They grow fruits and vegetables in their "Sharing" demonstration garden located at Trailside in the Watchung Reservation. Two of the volunteers coordinate with local food pantries for delivery of the produce. The County Agricultural Agent, Madeline Flahive DiNardo, has been working with the community organization "Come Grow with Us" affiliated with the United Way of Union County, Groundworks Elizabeth and NJ Assemblywoman Annette Quijano's office to establish community vegetable gardens. The goal of the project is to provide organizations with raised beds and vegetable transplants to get community gardens started, give guidance on growing and harvesting vegetables, and teach plant and nutrition workshops.

Results

The Master Gardeners 'Sharing Garden' project yielded 2,460 pounds of produce in 2014. The retail value of the small fruits, herbs and vegetables donated to fifteen local agencies that provide

food to their clientele is \$4,220.06. Since 2002, volunteer Master Gardeners have cultivated and donated 23,820.5 lbs. of hardy vegetables, fruit and herbs to help feed the hungry in Union County. The "Come Grow with Us" gardens provide fresh produce to the community garden workers and their families. The community gardens provide 4,300 pounds of produce to their community.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
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V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

No items to report.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

NJAES research and extension outcomes related to this planned program were evaluated utilizing a variety of evaluation methods appropriate for each initiative to determine effectiveness on both a qualitative and quantitative level. For KASA and practice change we included the measurement of knowledge gained as measured by pre/post Likert-scale assessments. Surveys were used to measure increase in skills acquired, behavior change and practice adoption. For process evaluation we focused on program delivery, participation, relevance and timeliness. Data was collected at appropriate times for each initiative that supports this planned program. IRB approved evaluation instruments were used to collect research and extension data. Data analyses and comparisons relevant to basic and applied research and demonstration were collected and analyzed and reported utilizing a variety of data collection methods appropriate to each research question. The major goal of evaluating is the demonstration of social, economic, behavior and

environmental changes in conditions that contribute to improved quality of life as a result of participation in programs and benefits of research solutions. See state defined outcomes for detailed results of each initiative.

Key Items of Evaluation

None to report.