

**V(A). Planned Program (Summary)**

**Program # 8**

**1. Name of the Planned Program**

Childhood 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 |
|---------|--|-----------------|-----------------|----------------|----------------|
| 703     | Nutrition Education and Behavior   | 17%             |                 | 32%            |                |
| 704     | Nutrition and Hunger in the Population   | 13%             |                 | 10%            |                |
| 724     | Healthy Lifestyle  | 15%             |                 | 3%             |                |
| 801     | Individual and Family Resource Management  | 10%             |                 | 0%             |                |
| 802     | Human Development and Family Well-Being  | 15%             |                 | 40%            |                |
| 803     | Sociological and Technological Change Affecting Individuals, Families, and Communities | 13%             |                 | 10%            |                |
| 806     | Youth Development  | 17%             |                 | 5%             |                |
|         | <b>Total</b>   | 100%            |                 | 100%           |                |

**V(C). Planned Program (Inputs)**

**1. Actual amount of FTE/SYs expended this Program**

| Year: 2012               | Extension |      | Research |      |
|--------------------------|-----------|------|----------|------|
|                          | 1862      | 1890 | 1862     | 1890 |
| Plan                     | 18.0      | 0.0  | 3.0      | 0.0  |
| Actual Paid Professional | 43.3      | 0.0  | 1.5      | 0.0  |
| Actual Volunteer         | 0.3       | 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    |
| 310278              | 0              | 30870          | 0              |
| 1862 Matching       | 1890 Matching  | 1862 Matching  | 1890 Matching  |
| 668360              | 0              | 137401         | 0              |
| 1862 All Other      | 1890 All Other | 1862 All Other | 1890 All Other |
| 1584983             | 0              | 14237          | 0              |

### V(D). Planned Program (Activity)

#### 1. Brief description of the Activity

Research activities in childhood obesity include identifying a potential molecular target for the treatment of obesity-induced atherosclerosis and hepatic steatosis; continuing support for the PROSPER program, which strengthens families; and studying policy implications of structural changes in food retailing.

Extension activities in childhood obesity include the Family Fitness program, a pilot of the new Certified Food and Wellness Volunteers program, and the new MyPlate icon training, which explains the updated USDA recommendations for foods in a healthy diet.

#### 2. Brief description of the target audience

nonprofit associations/organizations; community groups; education; general public; government personnel; human service providers; students/youth; volunteers/extension leaders; national and state program leaders and extension educators and paraprofessionals in Expanded Foods and Nutrition across the country; families and parents; human science researchers; special populations (at-risk and underserved audiences); regulatory associations; USDA/ERS

#### 3. How was eXtension used?

The Families, Food and Fitness COP has a recipe database that is a helpful reference.

Penn State Cooperative Extension supports faculty and staff use of eXtension and promotes communities of practice as a way of broadening sources of information and outreach. Penn State Cooperative Extension supports the professional development offered through eXtension.org. Pennsylvania is represented by 152 eXtension members in 47 of the 73 approved CoPs.

### V(E). Planned Program (Outputs)

#### 1. Standard output measures

| 2012          | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---------------|------------------------|--------------------------|-----------------------|-------------------------|
| <b>Actual</b> | 3266                   | 1369119                  | 2752                  | 420                     |

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

**Patent Applications Submitted**

Year: 2012

Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

| 2012          | Extension | Research | Total |
|---------------|-----------|----------|-------|
| <b>Actual</b> | 0         | 0        | 19    |

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Number of invention disclosures submitted.  
Not reporting on this Output for this Annual Report

**Output #2**

**Output Measure**

- Number of people enrolled and/or registered in programs.  
Not reporting on this Output for this Annual Report

**Output #3**

**Output Measure**

- Number of people enrolled and/or registered in all programs related to Childhood Obesity

| Year | Actual |
|------|--------|
| 2012 | 9813   |

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

| O. No. | OUTCOME NAME   |
|--------|--|
| 1      | Number of participants who were evaluated and demonstrated increased knowledge and skills.   |
| 2      | Number of participants who were evaluated in a follow-up and who implemented/adopted practices.  |
| 3      | Number of volunteers that helped with program leadership or delivery.  |
| 4      | Number of participants in all programs related to Childhood Obesity who were evaluated and demonstrated increased knowledge and skills.      |
| 5      | Number of participants in all programs related to Childhood Obesity who were evaluated in a follow-up and who implemented/adopted practices. |
| 6      | Potential molecular target for the treatment of obesity-induced atherosclerosis and hepatic steatosis  |
| 7      | Families strengthened through PROSPER  |
| 8      | Studied policy implications of structural changes in food retailing  |
| 9      | Families participating in Family Fitness program   |

**Outcome #1**

**1. Outcome Measures**

Number of participants who were evaluated and demonstrated increased knowledge and skills.

Not Reporting on this Outcome Measure

**Outcome #2**

**1. Outcome Measures**

Number of participants who were evaluated in a follow-up and who implemented/adopted practices.

Not Reporting on this Outcome Measure

**Outcome #3**

**1. Outcome Measures**

Number of volunteers that helped with program leadership or delivery.

Not Reporting on this Outcome Measure

**Outcome #4**

**1. Outcome Measures**

Number of participants in all programs related to Childhood Obesity who were evaluated and demonstrated increased knowledge and skills.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

| <b>Year</b> | <b>Actual</b> |
|-------------|---------------|
| 2012        | 1346          |

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

**4. Associated Knowledge Areas**

| <b>KA Code</b> | <b>Knowledge Area</b>  |
|----------------|--|
| 703            | Nutrition Education and Behavior   |
| 704            | Nutrition and Hunger in the Population   |
| 724            | Healthy Lifestyle  |
| 801            | Individual and Family Resource Management  |
| 802            | Human Development and Family Well-Being  |
| 803            | Sociological and Technological Change Affecting Individuals, Families, and Communities |
| 806            | Youth Development  |

**Outcome #5**

**1. Outcome Measures**

Number of participants in all programs related to Childhood Obesity who were evaluated in a follow-up and who implemented/adopted practices.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

| <b>Year</b> | <b>Actual</b> |
|-------------|---------------|
| 2012        | 209           |

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

**What has been done**

**Results**

#### 4. Associated Knowledge Areas

| <b>KA Code</b> | <b>Knowledge Area</b>  |
|----------------|--|
| 703            | Nutrition Education and Behavior   |
| 704            | Nutrition and Hunger in the Population   |
| 724            | Healthy Lifestyle  |
| 801            | Individual and Family Resource Management  |
| 802            | Human Development and Family Well-Being  |
| 803            | Sociological and Technological Change Affecting Individuals, Families, and Communities |
| 806            | Youth Development  |

#### Outcome #6

##### 1. Outcome Measures

Potential molecular target for the treatment of obesity-induced atherosclerosis and hepatic steatosis

##### 2. Associated Institution Types

- 1862 Research

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

| <b>Year</b> | <b>Actual</b> |
|-------------|---------------|
| 2012        | 1             |

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Obesity contributes to atherosclerosis and hepatic steatosis (chronic inflammation caused by activation of macrophages in blood vessels and liver, respectively). M1 macrophages are key to immunity by producing inflammatory chemicals that recruit immune cells to the site of infection, are microbicidal, and promote acquired immunity. M2 macrophages inhibit inflammation and promote tissue repair. M2 macrophages dominate non-inflamed tissue and lean animals, and there is a shift to M1 phenotype with obesity correlating with disease progression.

###### **What has been done**

The Ron receptor tyrosine kinase is expressed on tissue-resident macrophages and tumor-associated macrophages, both of which display characteristics of M2 cells. Stimulation of primary macrophages with the ligand for Ron, macrophage-stimulating protein, promotes expression of M2-associated genes while inhibiting the production of proinflammatory cytokines and nitrogen

radicals in response to microbial stimulation. Therapies such as Ron could be efficacious in treatment of inflammatory diseases associated with obesity.

### Results

We have shown that the absence of Ron exacerbates the development of atherosclerosis and hepatic steatosis in mice on a high cholesterol diet. We have also shown that Ron is primarily expressed on adipose tissue macrophages with an M2 phenotype and that the absence of Ron alters the balance of macrophages in adipose tissue, increasing the percentage of M1 macrophages while decreasing the number of M2 macrophages. We have also shown that metabolites of omega-3 polyunsaturated fatty acids promote the expression of Ron in macrophages. We have identified a potential molecular target for the treatment of obesity-induced atherosclerosis and hepatic steatosis that can shift the balance of macrophage activation to limit inflammation and promote healing.

## 4. Associated Knowledge Areas

| KA Code | Knowledge Area    |
|---------|-------------------|
| 724     | Healthy Lifestyle |

### Outcome #7

#### 1. Outcome Measures

Families strengthened through PROSPER

#### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

#### 3a. Outcome Type:

Change in Action Outcome Measure

#### 3b. Quantitative Outcome

| Year | Actual |
|------|--------|
| 2012 | 227    |

#### 3c. Qualitative Outcome or Impact Statement

##### Issue (Who cares and Why)

PROSPER is a model for diffusing evidence-based prevention programs to school and communities to strengthen families, build youth skills, and reduce youth substance use and other problem behaviors. Community teams facilitated by Penn State Extension lead PROSPER. PROSPER teams implement at least 1 out-of-school program (the Strengthening Families Program for Parents and Youth aged 10-14 [SFP 10-14] and Lifestyle Triple P) and at least 1 in-school program (LifeSkills Training, All Stars, Lions Quest, or Promoting Alternative Thinking

Strategies [PATHS]).

**What has been done**

Faculty continued to maintain the original PROSPER (PROMoting School/community university Partnerships to Enhance Resilience) sites. The preparatory work with states ready for national expansion continued to progress with potential outside funding for expansion.

**Results**

Thirty 7-week Strengthening Families Programs for Parents and Youth 10-14 (SFP 10-14) were conducted. 227 families including 340 youth and 374 parents/caregivers attended at least one session. According to pre/post or retrospective surveys, parents/caregivers (N=178) attending SFP 10-14 reported:

- 79%, improved family cooperation and problem solving
- 75%, increased values and goals communication
- 69%, increased parental supportiveness

SFP 10-14 youth participants who completed pre/post or retrospective surveys reported:

- 65% (N=155), improved stress coping skills
- 64% (N=109), increased consistent discipline
- 61% (N=109), improved family cooperation and problem solving

SFP 10-14 families (N=109) who completed pre/post or retrospective surveys reported:

- 67%, improved family cooperation and problem solving
- 61%, improved parent-child relationship quality and increased positive rule enforcement.

**4. Associated Knowledge Areas**

| <b>KA Code</b> | <b>Knowledge Area</b>                   |
|----------------|---|
| 802            | Human Development and Family Well-Being |

**Outcome #8**

**1. Outcome Measures**

Studied policy implications of structural changes in food retailing

**2. Associated Institution Types**

- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

| <b>Year</b> | <b>Actual</b> |
|-------------|---------------|
|-------------|---------------|

2012

1

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

Society as a whole should understand the consequences of nontraditional food retailers' expansion on issues such as food security (a household being able to acquire enough food to meet the needs of all its members), obesity, food access, and food deserts.

#### What has been done

Researchers analyzed how the presence of different types of stores affects, at the aggregate level, the incidence of consumption of fruits and vegetables among U.S. adults. An article has been submitted to a peer-reviewed journal and it has undergone two rounds of reviews.

#### Results

Results showed that while the presence of specialized stores (fruit and vegetables stores) can have an ameliorating effect on diets at the aggregate level, the presence of supercenters may have a worsening effect.

### 4. Associated Knowledge Areas

| KA Code | Knowledge Area   |
|---------|--|
| 703     | Nutrition Education and Behavior   |
| 704     | Nutrition and Hunger in the Population   |
| 803     | Sociological and Technological Change Affecting Individuals, Families, and Communities |

### Outcome #9

#### 1. Outcome Measures

Families participating in Family Fitness program

#### 2. Associated Institution Types

- 1862 Extension

#### 3a. Outcome Type:

Change in Action Outcome Measure

#### 3b. Quantitative Outcome

| Year | Actual |
|------|--------|
| 2012 | 96     |

#### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

Families need focused information about healthy foods, meal planning, ways to improve their diets, and the benefits of physical exercise.

**What has been done**

For the Family Fitness program, four programs were run in three counties--Butler, Columbia, and Luzerne--reaching 12 parents and 84 children. Seven parents and 83 children completed a matched survey.

**Results**

Results showed that 74% improved enjoyment of family physical activity, 57% increased knowledge of Nutrition Facts labels, 43% of children decreased sugary food intake, 100% improved diet in two or more areas, 57% planned a meal together, and 67% improved family physical activity.

60% of children reported improved knowledge of food high in calcium, 60% said they would try new healthy food, and 50% said they would increase physical activity.

**4. Associated Knowledge Areas**

| <b>KA Code</b> | <b>Knowledge Area</b>            |
|----------------|----------------------------------|
| 703            | Nutrition Education and Behavior |
| 724            | Healthy Lifestyle                |
| 806            | Youth Development                |

**V(H). Planned Program (External Factors)**

**External factors which affected outcomes**

- Appropriations changes
- Competing Programmatic Challenges
- Other (Extramural Funding)

**Brief Explanation**

There were many fewer Family and Consumer Sciences staff to provide and run programs this year due to layoffs and retirement. Reduced State funding impacted both the research and extension functions of the College of Agricultural Sciences and resulted in retirements and layoffs of key faculty and staff across all areas of the College.

All funding for PROSPER/SFP 10-14 programs is obtained through external sources. With the current economic climate, it has become more challenging to find funding to sustain programming.

**V(I). Planned Program (Evaluation Studies)**

**Evaluation Results**

The generation of outcomes from existing programs and the development of new programs require improved evaluation that identifies pre- and post- responses to information and monitoring for long-term behavioral changes that result in improved environmental outcomes. The evaluations conducted thus far provide initial measures of implementation, but long-term monitoring is needed to ensure that the practices are successfully managed over time.

### **Key Items of Evaluation**

The Certified Food and Wellness volunteers pilot program had 25 participants, and 100% indicated that the course met or exceeded their expectations. This program has 14 lessons online via ANGEL and a 1-day hands-on training.

See also highlights of state-defined outcomes in this planned program.