Executive Summary

College of Agricultural, Consumer and Environmental Sciences
Office of Academic Programs/Diversity Programs
University of Illinois at Urbana-Champaign

A. Pre-College S.T.E.M. Summer Youth Programs

The ACES Pre-College STEM experiences are a hands-on introduction to disciplines and careers in the agricultural, consumer and environmental sciences.

The Research Apprentice Program students engage in a special 5 week problem-solving activity, in teams of 4-5 members, designed by the disciplines in the major academic disciplines (Human Development Professions, Ag Communications, Ag Business and Marketing, and Ag Leadership Education, Ag and Biological Engineering, Crop Sciences and Plant Biotechnology, Animal Sciences, Environmental Sciences, and Food Science and Human Nutrition) within the College of Agricultural, Consumer and Environmental Sciences (ACES) in partnership with professionals from business and industry. The first two weeks involves learning skills related to math, biological science, and science writing. During the next three weeks, each disciplined team will conduct a science/research related project designed to demonstrate a basic understanding of those math and science skills as it applies to their assigned team with the food, human and environmental system. The projects are real world problems/solutions designed by business and industry sponsors in collaboration with ACES RAP program staff. Students will visit their related business/industry sponsor and meet with professional managers and scientists as they study their assigned problem.

The Ag Discovery Program engages students in a special 5 week experience focused on food security and biosecurity related issues. It is sponsored by the Animal Plant Health Inspection Service of the USDA, which is the agency charged with safeguarding the U.S. food supply. The first two weeks involves learning skills related to math, biological sciences, and science writing. During the next three weeks, a group of 14 students are selected to participate in a series of hands-on activities lead by government veterinarians, plant and animal biologists, biotechnologists, and wildlife science professionals. At the end of the experience, students will demonstrate a basic understanding of how the federal government works for the protection of plants and animals, and how it related to human health.

In both RAP and Ag Discovery components, students engage in special learning activities as problem-solving disciplinary teams. Each team must demonstrate a basic understanding of the sciences involving their assigned area of study. The math and science based lessons, along with a series of facility visits and seminars conducted by participating businesses and campus professionals, serve as a resource base for this five week experiential STEM education experience. All activities emphasize group creativity and critical thinking to solve problems. Computers and other technology are utilized as learning tools. At the conclusion of this experience, each team presents their STEM related project.

Education about STEM in the context of the food industry emphasizes basic chemistry and microbiology and engineering and involves areas such as food science, sensory science, product development, packaging science, and the business aspects of manufacturing, marketing and distribution systems. Within the context of the plant sciences, students understand physiology, breeding and genetic engineering. Within the context of Animal Sciences, students learn basic biology and microbiology as it applies to animal physiology, genetics, health and nutrition. An emphasis is placed on animal health and safety and the impact of animals on human nutrition.
The application of math and science skills is a hallmark of the RAP experience. Students test their STEM knowledge through hands-on projects in various ACES laboratories, where they conduct short experiments designed to continue to build interest in STEM careers as related to the food, human and agricultural sciences, and challenge their basic math, science and writing skills. At the end of their project, each student team submits a joint project paper and makes a presentation to their peers and scientists on the University of Illinois campus.

Encouraging students to pursue careers in the STEM areas related to the food and agricultural sciences is the key mission of the Research Apprentice Program experiences at the University of Illinois. This is accomplished as noted below:

1) Promoting math and science careers through lessons and techniques starting at the high school level and extending into college.
2) Bridging gaps in the math skills of high school students while encouraging them to pursue STEM majors in the College of ACES.
3) Bridging gaps in the science skills of high school students through academic experiences in chemistry and biology, while encouraging them to pursue STEM majors in the College of ACES.
4) Providing hands-on STEM experiences for high school students through creative projects and laboratory experiments in the College of ACES research facilities.
5) Exploring exciting STEM disciplines and scientific fields through demonstrations, classroom presentations, hands-on activities, and contacts with professionals in these technical fields.
6) Promoting students’ stronger performance in STEM core courses in high school, which creates a successful gateway to college.
7) Creating opportunities for STEM faculty and graduate students to serve as mentors for high school students and promote awareness of STEM career opportunities.

Pre-College STEM education in the College of ACES, through the Research Apprentice Program, characterized by:

- Hands-on experimental learning with real projects and experiments
- Math and science learning as its core
- Technology driven
- Team project focused
- Mentoring by university scientists and graduate students in STEM disciplines
- Promotes creativity and inspires critical thinking
- Leads to success in rewarding STEM careers

Young Scholars Program (YSP) is intensive summer enrichment, college transition program for students enrolling in the College of ACES. During the summer prior to enrollment, students take a four week intensive classroom and on-line review of pre-calculus/calculus, chemistry and writing composition, designed to prepare them for their academic year in college. It includes a discovery component in which students learn about the academic supports and leadership development opportunities available to enhance their academic experience. Academic support is continued throughout the academic year to support high academic performance in the selected discipline. The focus is primarily on underrepresented student groups and first generation college students.

YSP is designed to help new college students to gain an early perspective on college life that will improve their academic and social transition from their communities into the fast paced and highly competitive college environment. College retention through improved academic performance and improved social
networks is the goal. Academic progress in coursework is monitored closely and students receive personal counseling throughout their college experience to ensure that they succeed in their chosen academic major and career pathway. The YSP experience provides students with a well round college education through scholarly performance, mentoring, undergraduate research, leadership development, internship experiences, and global awareness.

B. Brief RAP History 1988 – 2017

- 1426 students have participated in ACES pre-college experiences between 1988-2017
- African Americans- 45 percent and Latinos at 55 percent of participants
- Females - 78 percent of all participants
- 80 percent of participants from public and private schools located in the seven county Illinois metropolitan area (i.e. Cook, Lake, DuPage, Kane, Grundy, McHenry, Will)
- 65 percent of participants live within the city of Chicago
- Approximately 95% RAP seniors enrolled in a four year college following graduation
- 84 percent of students selected a math, science or engineering related field as a college major
- 50 percent of RAP participants after their senior year enrolled at the University of Illinois at Urbana-Champaign (UIUC)
- Over the last 5 years (2013-17), over 65% of the 150 RAP seniors enrolled in the College of ACES

C. Demographics of Summer RAP and Ag Discovery 2018 Participants

Gender and Ethnicity Make-Up of Participating Students

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<thead>
<tr>
<th>Gender</th>
<th>Number of Students</th>
<th>Percentage of Students</th>
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<tbody>
<tr>
<td>Female</td>
<td>49</td>
<td>79%</td>
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<td>Male</td>
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<tr>
<th>Race</th>
<th>Number of Students</th>
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<tr>
<td>Hispanic</td>
<td>34</td>
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<td>White</td>
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<tr>
<td>Other</td>
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Year in High School Make-Up of Participating Students

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<tr>
<th>Year in Spring 2017</th>
<th>Number of Students</th>
<th>Percentage of Students</th>
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<tr>
<td>Freshman (9th Grade)</td>
<td>4</td>
<td>6%</td>
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<td>Sophomore (10th Grade)</td>
<td>21</td>
<td>34%</td>
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<td>Junior (11th Grade)</td>
<td>38</td>
<td>63%</td>
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<td>Senior (12th Grade)</td>
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Geographical Distribution of Participating Students

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<tr>
<th>State of Origin</th>
<th>Number of Students</th>
<th>Percentage of Students</th>
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<td>Illinois</td>
<td>60</td>
<td>97%</td>
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<tr>
<td>(Chicago/Suburbs)</td>
<td>(52)</td>
<td>(84%)</td>
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<tr>
<td>(Other Illinois)</td>
<td>(8)</td>
<td>(13%)</td>
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<tr>
<td>Non-Resident IL</td>
<td>2</td>
<td>3%</td>
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RESEARCH APPRENTICE PROGRAM (RAP) June 24 –July 29, 2018

A. Program Description Overview

The Program Director provided a comprehensive overview of the summer program, the schedule, and standards of student performance. This also provided an opportunity for students and parents to meet the Program Director and program staff and learn more about the current sponsors of RAP. This meeting was required of participants and their parents or guardians.

Microcomputer Applications Workshops
This workshop series ensured that all participants achieved a basic level of computer literacy. Students were taught basic word processing, e-mail, spreadsheets, power point, and uses of the internet as an information gathering tool.

Issues/Ethics and Leadership Seminars
These sessions focused on ethical behavior in both academic and business settings. Topics such as academic integrity, personal choices, and research behavior were discussed. During field trips, students were introduced to business ethics.

**Reading, Writing, and Qualitative Skills**  
Over three weeks, exercises were used to challenge the reading and writing skills of participants. Participants were exposed to educational programming designed to improve basic writing skills and performance on standardized testing. This included reading and writing assignment utilizing the resources of the University Library.

**Technology/Computer Skills**  
A special computer laboratory was set up in the residence hall to enable students to work on their assigned team projects. Students were required to demonstrate the use of technology, such as PowerPoint, in their final presentations. Also, students learned how to utilize technology to access information and other resources in the University of Illinois Library System, the largest university library system in the nation.

**Biological Sciences Knowledge**  
Over two weeks, a biology instructor is employed to assess the knowledge of participants in advance of their beginning their assigned team projects. Basic terms and concepts are discussed, along with safety quizzes focusing on research, laboratory, etc. being administered to all participants.

**Quantitative Reasoning and Math Skills**  
Students engage in a series of assessment activities and exercises related to math and its application to science to determine the quantitative and reasoning skills of participants and to formulate a plan to improve these. Students then apply math concepts to solve problems typically encountered in business and industry. A math assessment tool, called ALEKS, is utilized to assess and assist participants in improving their math and quantitative reasoning skills.

**B. Program Schedule Overview**

**June 24 – July 29**

**Week One**

**Day 1/**

Program participants check-In and Program Welcome/Program Overview

**Day 2-6/**

Participants engaged in math and science review during throughout the week

**Week Two**

**Day 1/**
Program participants check-In and Program Welcome/Program Overview

**Day 2**/ Nestle-Purina (St. Louis, MO)

**Day 3**/ St. Louis Zoo (St. Louis, MO)

**Day 4**/ Monsanto Research (Chesterfield, MO)

**Day 5**/ Deere Harvester Works (Moline, IL) and CAT (Peoria, IL)

**Day 5**/ Abraham Lincoln Presidential Library and Museum (Springfield, IL)

**Team Projects Component** - (weeks three, four and five)
Over three weeks, students were assigned to small groups or teams where they conducted a set of special science learning activities as developed by the activity sponsor and the hosting academic department in the College of ACES. Students are expected to demonstrate a basic understanding of how their science group contributes to the food supply chain. A series of visits and seminars both on and off campus serves as a resource base for the information necessary to successfully complete this exercise. All activities emphasized teamwork, problem-solving, computer skills, and presentation skills. At the end of the program, each team presented the outcomes of their assigned project activities.

C. RAP Team Schedules

1. **Animal Technology Team: Department of Animal Sciences**
   Sponsored by Tyson Foods, Inc.

   **Julie Klein and Katelyn Jones-Hamlow, Leaders, Animal Sciences**
   Antonio King, Jr. – Southeast Springfield
   Alexandra Alanis – Senn
   Kenny Tepede – Thornton Fractional South
   Ebony Rankin – Danville
   Kimberly Uruchima – David Speers
   Markhia Robinson – Vincent Ag School (WI)

   This team of 6 students involved learning about the food supply chain involving animals from production to the consumer. Students conducted a science project which involved area of the meat science and muscle biology. Participants utilized labs on campus and visited the Hillshire Brands facility (Downers Grove, IL) where they conducted small hands-on projects to better understand the meat science industry, and where they engaged in various learning activities to expand their knowledge of the profession.
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<td>Ryan Dilger Lab</td>
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<td>Chicken Dissection Neurosciences DNA extraction</td>
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2. Food Industry Team: Department of Food Science and Human Nutrition
Sponsored by PepsiCo Research and Development, Barrington, IL

Ozan Kahraman, Leader, Food Science & Human Nutrition
Jolee Kahl – Lanphier – Springfield
Maryam Ahmed – Hector Garcia
This team of 5 students involved learning about the food supply chain involving food product development from the science of food to the consumer. Students conducted science projects which helped them to better understand the food industry. These learning activities were carried out at the research and development facility (PepsiCo Research and Development in Barrington, IL) and the production and distribution plant (Quaker Oats Plant in Danville, IL).

WEEK 1

Day 1 (Monday, July 9th): Getting to Know Your Company and Your Product

Day 2 (Tuesday, July 10th):

- Team introductions, expectations and Game rules
- Food Quality and Safety Evaluation by Mining Social Media
- Food Safety and Microbiology
- Single and Multichannel Drying Platforms for Optimization of Food Dehydration
- Edible Gel System Based on Hydrophilic and Lipophilic Materials
- Lab Experience for PepsiCo Team: Barrington R&D Center Barrington, IL

Activities:
Learn what ingredients are important to a granola bar and how these ingredients affect the product, Granola Bar Nutrition

Day 4 (Thursday, July 12): Experimental Design for Food Scientists
Barrington, IL

Activities: Demonstration on how to make granola bars.
Work directly with food technologists to develop batches of granola bars.

Day 5 (Friday, July 13): Large scale production of food products: How many pounds of granola bars? Danville, IL

Activities: Travel to PepsiCo’s Danville, IL facility. Tour the Quality Assurance (QA) labs and observe large scale manufacturing of chewy granola bars.
Review plant rules for visitors.
**WEEK 2**

**Day 8 (Monday, July 16):** Student will have a group study at ACES library to give a presentation on a decided topic.

**Day 9 (Tuesday, July 17):** Student will have a group study at ACES library to give a presentation on a decided topic.

**Day 10 (Wednesday, July 18):**

**Reflections from field trips.** Gather information and specify the production chain of granola bars. Estimate cost, critical points, and most fundamental factors affecting the physicochemical properties, nutrition and consumer acceptability.

**Team Meeting: Presentations**

**Day 11 (Thursday, July 19):**

**Laboratory tour.** Discussion of the big picture for the project.

  - Evaluation of commercially available chewy bars
  - Recollection of allergen and medication information.

**Nutrition Fundamentals**

**SENSORY EVALUATION:** *How to set up a sensory study and how to evaluate food as a critical consumer.*

  - Creation of sensory ballots and discussion for parameters evaluated

**Day 12 (Friday, July 20)**

**Texture Lab (Analyzing textural properties of granola bars by using Texture Analyzer)**

**University of Illinois Pilot Plant tour**

**Experiments Day** (Texture, water activity, syrup viscosity, density, Moisture content)

**WEEK 3**

**Day 15 (Monday, July 23):**

**Spray Drying**

**Ultrasonic Drying of apple slices**

**Experiment: Results from accelerated shelf life:** Sensory changes (aroma, appearance, flavor, and overall acceptability), color changes, discuss what happen to the lipids inside.

**Day 16 (Tuesday, July 24)**

- Organic and conventional agriculture
- Science, technology and society
• Team meeting and preparation of the group presentation

Day 17 (Wednesday, July 25)

Cooking class at Bevier kitchen (Chopped competition)
Discussions on cooking practice

Day 18 (Thursday, July 26)

Work on presentations

Day 19 (Friday, July 27)

Presentation rehearsal

3. Plant Biotechnology Team: Department of Crop Sciences
Co-sponsored by Corteva Agriscience

Brent Murphy, Leader, Crop Sciences
Prachi Mehendale – Oak Park River Forest
Aidan Rivera-Rogers – Urbana
Paola Beltran – Chicago Ag Sciences
Daisy Patino – Morton East

This team of 4 students involved learning about plant breeding, genetics and other aspects of plant biotechnology. This involved gaining a better understanding of these areas and how they relate to food security by visiting research and development laboratories at Corteva AgriSciences Indianapolis, IN and local facilities. In the laboratories on campus, students engaged in various learning activities which expanded their knowledge.

Plant Biotechnology Team Schedule

Dates: July 9th to July 27th

Subgroup project One
Week of July 9th:
• Introduction to the work performed in the lab.
• Introduction to safety in the laboratory
• Introduction to lab ware: equipment, lab ware, reagents, etc.
• Introduction to research done by the Team Leader.
- *Xanthomonas spp.*: motility assays. Understanding the basis and executing the first part of the experiment (attracting and starving plates)
- Phytoremediation: using lettuce to absorb copper from farms. First week of experiments (in the laboratory).

**Week of July 16th:**
- Second part of research project:
  - Executing swimming assays after inducing motility during the first week
  - Phytoremediation: using lettuce to absorb copper from farms. Second week of experiments (in the laboratory).
- Talk about GMOs: truth and myth. How to look for reliable sources of information.

**Week of July 23rd:**
- Third part of research project:
  - Analyzing results of motility assays and reaching to conclusions.
  - Analyzing results of copper growth and reaching to conclusions.
- PCR: hands into practice.

**Subgroup Project two:**

Lab work includes the following:
- Construct mutagenesis and cloning
- *E. coli* transformation and dose response
- Maintaining greenhouse experiments
- Development of Amaranth specific markers
- Development of herbicide resistance diagnostic markers
- Isolation and culture of waterhemp pathogens

Field work includes the following:
- Collection of waterhemp pathogens

**Field Trips**

**John Deere -- Moline, IL**
**Corteva -- Ivesdale, IL: Plant Biotechnology/Genetics Introduction**
**USDA ARS -- Peoria, IL**

**Danforth Center, St. Louis, MO**
**Corteva AgriSciences Global Headquarters - Indianapolis, IN**
4. Engineering and Technology Team: Department of Ag and Biological Engineering
Co-sponsored by John Deere Company and Caterpillar, Inc.

Pratik Lahiri, Leader, Ag & Biological Engineering
Amulya Aluru – Northside
Liam Reynolds – Jones
Kiana Ortiz – Chicago Bulls
Luria Tapia – Hancock

This team of 4 students involved learning about how engineering and technological development support the food and agricultural system. This involved better understanding of areas of agricultural engineering such food and bioprocessing, soil and water conservation, power, and biological; as well as the management of such systems. Participants conducted projects in laboratories of the department of Agricultural and Biological Engineering. At the CAT Center, they experienced the simulator, and at John Deere, they attended a lecture and toured the Harvester Works plant.

Day 2 (Tuesday, July 10)
Lab safety training and intro to ABE.

Day 3 (Wednesday, July 11)
Intro to Anaerobic Digesters talk by Dr Abhishek Dhoble

Day 4 (Thursday, July 12)
Algae and Biofuels lab activity with Michael Stablein

Day 5 (Friday, July 13)
Setting up Anaerobic Digesters

Day 8 (Monday, July 16)
Field trip to Urbana water treatment plant and experimental setup

Day 9 (Tuesday, July 17)
Trip to John Deere and CAT at Research Park
Day 10 (Wednesday, July 18)
Water lab demo and lecture by Bianca Bailey, project datapoint collection

Day 11 (Thursday, July 19)
ECE building and antenna lab tour with Pallavi Sharma

Day 12 (Friday, July 20)
Project: Lab work and final data collection

Day 15 (Monday, July 23)
Project Data Analysis.

Day 16 (Tuesday, July 24)
Project Data Analysis and report writing.

Day 17 (Wednesday, July 25)
Project: Presentation Prep

Day 18 (Thursday, July 26)
Machine Learning for Mastitis talk by Dr Abhishek Dhoble

Day 19 (Friday, July 27)
Machine Learning demo and activity

5. Ag Business and Marketing Team:  Department of Ag and Consumer Economics

Joseph Murray, Leader, Ag and Consumer Economics
Joel Barboza – Hancock
Terrence Franks – Sarah Goode
Breann Pearson – Canton (MI)
Kalliah McKinney – Westinghouse
Jorge Garza - Arcola
Stephanie Sanchez – Senn
This team of 6 students involved learning about the challenging role involving how we apply economic principal to solve issues in financing the feeding and clothing of people around the world. This involved learning about markets and management skills that answer questions related to food production, processing and the retail sector of the agricultural and food industry, as well as the impact of such issues on the environment. The students visited facilities where they learned about marketing of food products, and gained an understanding of production issues affecting the market.

**RAP Trips**

NAFB Luncheon Kansas City MO, July 10th
CBT/CME Trip
Fair Oaks Farm

**Project Plan**
Students will learn basic economic principles and business development strategies while reviewing agribusiness case studies. They will then be provided a case study synopsis and develop proposals for solving the business issue. The proposals will be presented in a powerpoint.

7/9
Literature review 3-4 days.

Learn about lit reviews. Learn about abstracts. Learn about case studies. Find 3-4 (1 already found) articles and read and review them. Highlight key findings detailing the use of case studies for research

7/10
Begin writing literature review. Learn how to. Supply templates. Rough draft done. And emailed to me.

7/11
Finish final draft begin learning agribusinesses strategies.

7/12
Intro to case analysis; Intro to strategic management; Intro SWOT

7/13
external environment; internal environment;

7/16
Vertical and Horizontal integration

7/17
Cost leadership activities (Trip to grocery stores Walmart & Aldi); Product differentiation; Diversification; strategic alliances

7/18
Mergers & Acquisitions

7/19
CASE WORK

7/20
CBOE 10:00 am – 10:45am; Fair Oaks Farm/case company

7/23 - 25
CASE WORK

7/26 - 31
Presentation work, draft and reviews
6. **Environmental Sciences Team**: Department of Natural Resources and Environmental Sciences

**Scott Nelson, Leader, Natural Resources & Environmental Sciences**
Samantha Lambert – Taft
Margaret Neeson – Chicago Ag Sciences
Paola Montero-Alvarez – Vincent Ag School (WI)
Cristian Alvarez – Victor Andrew
Irann Martinez – Goode
Madison Garcia – Stevenson

This team of 6 students involved learning about the how humans need to learn to better manage complex issues involving climate, clean and abundant water, biodiversity, and the ecosystem in general. This involved filed trips to various local locations where students could observe wetlands, waterways, and ecosystems to better expand their knowledge.

**Simple Program Schedule:**

**Week 1 (7/9-15/2018):**

- **Monday** – Introductions
- **Tuesday** – Field trip to Meadowbrook Park / Introduction to iNaturalist (campus)
- **Wednesday** – Field trip to Phillips Tract: ornithology with Dr. Janice Kelly
- **Thursday** – Field trip to Momence Wetlands: ichthyology with Dr. Jerrod Parker
- **Friday** – iNaturalist & GIS workshop (campus)
- **Saturday & Sunday** – Free days

**Week 2 (7/16-22/2018):**

- **Monday** – Field trip to Vermillion River Observatory: herpetology with Dr. Jinelle Sperry
- **Tuesday** – Field trip to Vermillion River Observatory: students design research projects
- **Wednesday** – Field trip to Vermillion River Observatory: data collection (day 1)
- **Thursday** – Field trip to Vermillion River Observatory: data collection (day 2)
- **Friday** – Field trip to Nachusa Grasslands

**Week 3 (7/23-29/2018):**

- **Monday** – Process VRO research data (campus)
- **Tuesday** – Process VRO research data / Research presentations (campus)
- **Wednesday** – Field trip to Forest Glen Preserve
- **Thursday** – Prepare final presentation (campus)
- **Friday** – Mock presentations / Feedback (campus)
- **Saturday** – Final presentations
- **Sunday** – Ending banquet
### Communications and Media Team: Ag Communications Program

**Heather Cupps-Miler and Zachary Morgan, Leaders**

**Agricultural Communications Program**

- Mindy Leek – Century HS
- Diacos Love – Thornton Fractional North
- Sofia Serrano – Curie
- Isela Villasenor – Eric Solorio
- Stephanie Sanchez – Eric Solorio
- Taylor Gulley – Urbana Sr.

This team of 6 students gained an understanding of how media impacts the food and environmental systems by the way that media professionals communicate about such complex issues to the public. Student explored areas such as public relations, advertising, journalism, and broadcast field involving food, agriculture and the environment. They participated in a live local broadcast on one of the TV stations, and learned how to manage a survey.

#### Week 1

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<th>Day</th>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>Monday</td>
<td>7/11</td>
<td>ACES Presentations</td>
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| Tuesday | 7/12 | Morning: FSHNGSA Symposium ([https://publish.illinois.edu/foodforthefuture/](https://publish.illinois.edu/foodforthefuture/))
Afternoon: Moving from research to the real world
- History of Ag Comm
- Overview of major areas/skills (photography, newswriting, broadcast media, etc.), audiences
- Identifying newsworthy agricultural/environmental issues – social media exploration |
| Wednesday| 7/13 | Research Project Work Day |
| Thursday| 7/14 | Morning: Research Project Work Day
Afternoon: Plan Ag Answers segment |
| Friday  | 7/15 | Field Trip to Springfield (Illinois Beef Association – Illinois Public Radio – |

#### Week 2

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<th>Activity</th>
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<tbody>
<tr>
<td>Monday</td>
<td>7/18</td>
<td>Research Project Work Day</td>
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<tr>
<td>Tuesday</td>
<td>7/19</td>
<td>Research Project Work Day</td>
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| Wednesday| 7/20 | Morning: Field Trip to Idea Garden and Unit 13 Office (UI Extension – Ava Heap)
Afternoon: Joint session with other Teams |
| Thursday| 7/21 | Research Project Work Day
Practice for Ag Answers segment |
| Friday  | 7/22 | Tape Ag Answers LIVE at WCIA-3
Field Trip to St. Louis (Novus International) |

#### Week 3

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<th>Activity</th>
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<tr>
<td>Monday</td>
<td>7/25</td>
<td>Research Project Work Day</td>
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<tr>
<td>Tuesday</td>
<td>7/26</td>
<td>Tour Campus Facilities (studios at Campbell and Mumford; Media Commons)</td>
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<tr>
<td>Wednesday</td>
<td>7/27</td>
<td>Open</td>
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8. Human Professions Team: Department of Human Development and Family Studies

Jasmine Routon, Leader, Human Development & Family Studies
Yesenia Ortiz – Dekalb
Dionnah Spires – Westinghouse
Angela Vazquez – Thornton Fractional North
Na’Kiya Thompson – Baltimore School for Women (MD)
Jaelyn Reeves – Sarah Goode

This team of 5 students who carried out activities to better understand societal issues that affects children, youth, adults, and families. Participants were given an overview of experiences that provided a broad based knowledge of physical, cognitive, and social development of children and adolescents through adulthood. They conducted a survey addressed development and cultural issues among teenagers.

WEEK ONE

July 9th – Company Presentations
July 10th – Introduction to Human Development, Career opportunities, and Campus Tour
July 11th – Infant/Toddler Temperament and Development & Career Center Workshop
July 12th – Preschooler Development & Gender Norms, Tour ECDL/CDL, & Grad Panel
July 13th – Family Academies, Early & Middle, & Youth Development, Research Methods

WEEK TWO

July 16th – Adolescence & Emerging Adulthood, Tour Cultural Houses
July 17th – Late Adulthood and Field Trip to Clark-Lindsey Nursing Home after lunch
July 18th – Family Theory (methods, IRB, ethics of research), Autism Project and FRC
July 19th – Literature Review, ACES library, Data Collection Strategy
July 20th – Sampling and Data Collection, SPSS Introduction, Field Trip to Crisis Nursery

WEEK THREE

July 23rd – Family Conflict and Parenting, Life Chart Activity, ACES library for codebook
July 24th – SPSS practice, Djembe Drum Class, Study Abroad Info, Data Analysis
July 25th – Data discussion and Work on Presentations
July 26 – Field Trip to Family Advocacy Center of Champaign 10 am and practice
July 27- Continue practicing presentations, editing, etc.

Research assignment: Pick a topic of interest. Develop consent forms, close-ended and open-ended survey questions to be given to all RAP participants. SPSS training and how to create a codebook.
9. Ag Discovery Program/USDA APHIS

Sponsored by the USDA Animal, Plant, Health and Inspection Service

Stanford Oglesby and Meagan Karuhn, Leaders
USDA Animal Plant Health Inspection Service
Fallon Kernan – Lake Park
Kaylani Esteban – Eric Solorio
Alexandra McNeal – Westinghouse
Chloe Markovits – Lycee Francais de Chicago
Angelica Pena – Pritzker
Jacob Henderson – Deer Creek-Mackinaw
Justin Chiu – Urbana Sr.
Adrianna Ruiz – Chicago Ag Sciences
Jessica Crane – Champaign Centennial
Anne Gill – Plainfield North
Maria Perez – Chicago Ag Sciences
Tyrese Buck – Mississippi

This group of 12 students had the goal of learning how the USDA through the Animal, Plant, Health and Inspection Service (APHIS) protects the nation’s food supply. Students were involved in activities conducted by USDA Veterinary Services, USDA Wildlife Services, and USDA Plant Protection and Quarantine. This involved field trips to various sites statewide, such as sale barns, meat labs, forest preserves, shipping facilities and airports, to learn about how these federal employees conduct their task of food security and biosecurity.

Week 1

RAP Presentation Day

APHIS/Ag Discovery Presentations
WS - Diversity of wildlife damage management activities conducted by the Illinois WS program
WS – Recovery and conflict management in Illinois
IES – Introduction to IES
VS – Introduction to VS/Zoonotic and Regulatory Diseases of Livestock
VS – On-farm Biosecurity and Zoonosis Prevention
VS – Donning and Doffing of PPE video and exercise
VS – Introduction to One Health
Introduce Team Projects, prep students for field activities

VS/WS – Kilgus Farmstead – Dairy, Creamery, and Country Store; Fairbury
WS – European Starling Damage Management at a Dairy
VS – Discussion of regulatory/public health concerns in cattle/dairies
VS – Fisher Community Fair and Horse Show, Fisher

WS/PPQ – Mid-America Airport, Mascoutah
WS – Wildlife mitigation techniques at an airfield
PPQ – North Bay Produce, Mascoutah
Cold treatment techniques for imports

VS – Dr. Clifford Shipley’s deer farm, St. Joseph
Overview of cervid husbandry, important diseases of cervids, etc.

Activity TBD/Work on Team Projects

**Week 2**

VS – Central Illinois Poultry Processing Plant, Arthur
Overview of humane poultry slaughter, meat processing, food safety/sanitation, poultry biosecurity, etc.
VS – Arthur Sale Barn, Arthur
Overview of market operations, livestock identification and recordkeeping, etc
Observe sale proceedings

VS – U of IL Meat Sciences Laboratory, Urbana
Overview of humane mammal slaughter, meat processing, food safety/sanitation
PPQ – Lake of the Woods Park, Mahomet (Izaak Walton Cabin)
Overview of Gypsy Moth Program
Overview of PPQ domestic trapping program

PPQ – ARS Lab and Containment Facility, Peoria

VS – U of IL College of Veterinary Medicine, Urbana
Veterinary Hospital tour
Fistulated cow
Gross Anatomy Lab
VS/IES – U of IL Veterinary Medicine Research Farm, Urbana
Mock FAD investigation exercise

AC – Scovill Zoo, Decatur
Mock Animal Care inspection of zoo facilities
VS – NIES presentation
Ocean Drover presentation
Work on Team Projects

**Week 3**

**Sunday, July 24**
Travel to Chicago overnight lodging

VS – Shedd Aquarium, Chicago
Behind the scenes tour, meet with aquarium veterinarian
Explore exhibits, including “At Home on the Great Lakes”

VS – VS Port Office, Des Plaines
Overview of Veterinary Services’ Port Operations

**PPQ/CBP – Chicago-O’Hare International Airport, Des Plaines**
Overview of Customs and Border Patrol’s Agricultural Passenger Operations

**WS – Cook County Forest Preserve, Orland Park**
Introduction and overview of Wildlife Services’ research projects at the Forest Preserves of Cook County
Overview of wildlife tracking
Overview of turtle biomonitoring
Overview of wildlife trapping methods
Prepare for team project presentations

**D. ACES Pre-College Summer Programs 2018 Recognition and Awards Banquet**
University of Illinois, I-Hotel, Illinois Ballroom
Sunday, July 29, 2018 from 12:00pm – 3:00pm

**RAP Guest Speakers**

Sidney Knight

Process Engineer, Swenson Technology

Designs and modifies pilot plant scale multiple effect evaporation systems to make variety of products ranging from fertilizers and battery salts to table salt and food additives. Primarily focuses on proving that the crystallization of these products using Swenson's proprietary multiple effect system are feasible on the pilot plant scale. Participated in RAP in 2005 and 2006 in Agricultural and Biological Engineering. Graduated from Thornwood High School in South Holland, IL; and B.S. degree at the University of Illinois in Agricultural and Biological Engineering. Professional positions have included Autocad Designer, Pilot Plant Technologist, P & ID Engineer, and Chemical Blending Engineer.
Dr. Angelica Lagunas
Doctor of Dental Medicine/PHD Oral Sciences

Grew up in Tinley Park, Illinois a Chicago suburb and attended Lincoln Way East High School. Participated in the Research Apprentice Program in 2003, 2004 and 2005, having conducted research projects in the Department of Animal Sciences. She completed her BS degree in Crop Sciences with a minor in Chemistry at the University of Illinois Urbana-Champaign in 2010. She has completed her Doctor of Dental Medicine and Doctor of Philosophy Degree in Oral Sciences, a dual doctorate program at the University of Illinois at Chicago in May 2018. Dr. Lagunas is currently looking to begin her dental practice and pursue her research interests.

E. ACES Pre-College Summer Programs

**Program Director**
Dr. Jesse Thompson
Assistant Dean and Coordinator, Diversity and Outreach
ACES Academic Programs
Jthomps5@illinois.edu
217-333-3380

**Assistant Program Director**
Diana Rodriguez
Coordinator, Urban Agricultural Education, Chicago
ACES Academic Programs

**Lead Resident Counselor**
Starr Gibson
Graduate Student, Dietetics
ACES Academic Programs
RAP/YSP Sponsor Appreciation

LEVEL ONE SPONSORS

College of ACES Departments
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Agricultural and Consumer Economics
Agricultural Communications
Animal Sciences
Crop Sciences
Food Science and Human Nutrition
Human Development and Family Studies
Natural Resources and Environmental Sciences

ACES Administration
Office of the Dean
Office of the Associate Dean, Academic Programs

The Office of the Provost

USDA Animal and Plant Health Inspection Service
Office of Civil Rights Diversity and Inclusion
APHIS Ag Discovery Program

LEVEL TWO SPONSORS

Corteva
Sponsor of Plant Biotechnology Team Project

PepsiCo
PepsiCo Research and Development
Sponsor of the Food Industry Team Project

Institute of Food Technologists (IFT) – Chicago Section

Tyson Foods, Inc.
Sponsor of Animal Technology Team

LEVEL THREE SPONSORS

Bayer U.S.
Sponsor of Program Field Trip

John Deere Company
Co-Sponsor of Engineering and Technology Team Activities

Caterpillar, Inc.
Co-Sponsor of Engineering and Technology Team Activities