



2013 CCE Summer Internships

CATEGORY ARCHIVES: [4-H STEM CAMP EXPERIENCE](#)

Testing the Activities

Posted on **August 13, 2013** by vs337@cornell.edu

Strawberry DNA

The messiest activity of all! Granted, camp is meant to be a messy experience but I certainly was not prepared for this level of stickiness. At the beginning of the activity the kids were a bit too preoccupied with the materials they were receiving; they thought working with test tubes and pipettes was pretty great. I managed to shift their interest from the science-like materials to scientists (that get to use these materials) and later the science behind the activity. After running this activity for the first time I noticed that the best method to include the science aspects was to simply talk them through what they were doing and mention a fact in every step. This was resulted in the kids becoming more interested in what they were currently doing, be it smashing the strawberries, adding the detergent, salt, and water solution. What made this great was that the kids became mentally engaged in the process of the activity and asked questions during the specific steps and after the entire activity was completed. At the end, the kids were very surprised with the visible DNA and would stop inquiring further about the process. In terms of getting kids interested in science this activity worked perfectly.

Stomp Rockets

Though Stomp Rockets was not as messy of an activity as DNA extraction, it did take a longer time to complete. The Stomp Rockets had to be glued very well so that they could properly launched. With these I felt it was best to build most of the rocket launchers before hand, and allow the kids to build some for themselves in teams. This way time was saved, yet the kids learned the science concepts behind the rocket launcher. This activity also proved to be successful considering that the kids were very amazed at how far the rockets could be launched which led to questions like: How can I make it go farther? Higher? Faster?

SideNote: Electric Cars was not possible as an activity due to weather uncertainty and scheduling issues.

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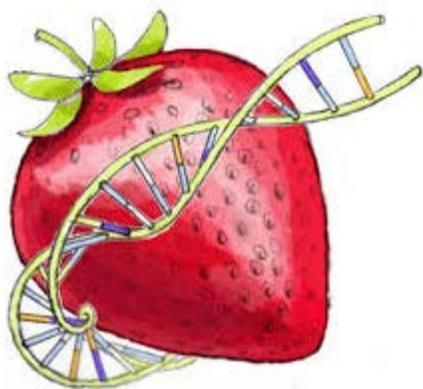
Activities to Pilot

Posted on **July 11, 2013** by **vs337@cornell.edu**

While at Cornell, after meeting with faculty and students I developed a list of possible activities that I believed would be appropriate and applicable in a camp setting with a group of middle-school age kids. I reviewed this list with Tim, my adviser, and decided on three activities that we thought would be the best and most feasible:

Strawberry DNA Extraction

(Idea should be credited to student group iGEM)



Learning Objectives:

- Develop a general idea of what DNA is
- Introduce idea of universal genetic code
- Understand why we can extract DNA

Basic Questions-

- Why do we use dish washing liquid?
- What does the alcohol do?
- Even though our DNA looks the same to the naked eye, what do you think makes it different?

Questions for Further Inquiry-

- If we all have the same DNA why are we different?

Stomp Rockets

(Idea should be credited to Cornell Exploration Station)



Learning Objectives:

- Develop a basic understanding of the relationship between volume and pressure
- Introduce them to concept of air resistance
- Introduce Newton's three laws of motion

Basic Questions-

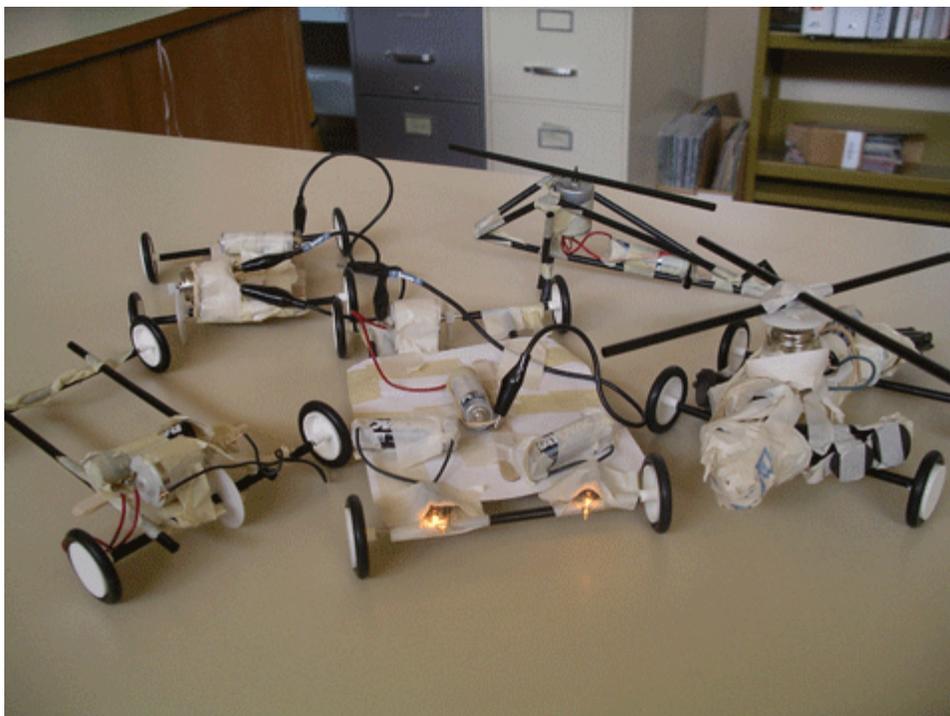
-What launches the rocket in the air?

Questions for Further Inquiry-

- What do you think would happen if we would have used a longer tube?
- When does the rocket go the fastest?
- How does the launching speed compare to the landing speed?
- What effect do you think the size of the bottle has on the launch? What would happen if we used a smaller bottle?
- What would happen if we launched this rocket in space

Electric Cars

(Idea should be credited to Cornell Exploration Station)



Learning Objectives:

- What batteries do and how they do it

Focus on:

- How batteries store energy in chemical reactions
- The battery's positive and negative terminals
- Exchanging of electrons
- Electric current
- What motors do

Focus on:

- How a motor make steady use of the electric current created from the battery
- Parts of a motor

Basic Questions-

- Why are batteries important?
- If energy is stored in batteries, why do we need a motor?

Questions for Further Inquiry-

- From where does the car get its energy?
- How can we make the car change directions?
- What can we do to make the car go faster?

Posted in **4-H STEM Camp Experience**

Staff Week and Preparation

Posted on **July 11, 2013** by **vs337@cornell.edu**



After some serious preparation, I was ready (or so I hoped) to head to Bristol Hills 4-H Camp. Going to summer camp was the second phase of my internship. While I camp I had several jobs — I needed to pilot three STEM activities with kids, making sure to introduce the relevant science background and concepts. These were meant to get kids interested and excited in different STEM fields, or at least get them to appreciate science and understand its importance and utility. Aside from piloting these three different activities, I needed to experience camp life — by this I mean I needed to inculcate myself in the camp culture and understand what summer camp meant. This last part would come in handy when trying to find out what resources from Cornell could be useful in a camp setting. In other words, with an insider perspective on camp-life, what camp is about, and what is done here, I would be able to better assess what student groups, organizations, faculty, and departments from Cornell would make great partners — a couple of steps further from resource.

Since my first time at Bristol Hills was during Staff Week, it was not hectic nor stressful. I joined the staff for some activities and informational sessions — I learned the campgrounds very well, different procedure for specific situations, and got very well acquainted with the types of activities that occurred during the morning and afternoon. This Staff Week also allowed me to have some time to think through the activities that I will be piloting with the campers; I had enough time to develop lesson plans for each activity to see the most effective ways to incorporate the science.

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Preparing for Summer Camp (not for the faint of heart)

Posted on **July 10, 2013** by vs337@cornell.edu

Since I had never attended a summer camp back when I was young, I had no idea what to expect or what to take. What I would find when I got to camp were actually the least of my worries; I was pretty much solely concerned with what I could do or take that would prepare me for my week long outing. You see, I have this terrible tendency of either over-packing or under-packing — I just can't seem to ever get it right. To avoid any packing-my-bags related

confusion or future complications, I decided to follow the handy dandy Bristol Hills Summer Handbook. So, after having been at camp, here is my evaluation of what you would want, what you would need, and what will make you spiral into a deep self-hatred if you forget.

Sleeping Essentials

-Sheets, sleeping bag (which can replace blankets), pillow



and for those of you who might need some extra-comforting (like me) a Pillow Pet will do the trick.

Clothing-

-TAKE EVERYTHING (pajamas included)

By this I mean, pack clothes for hot, warm, and chilly weather

Also, let's not forget water-proof shoes and plenty of socks (unless you want to get trench-foot) or a raincoat/umbrella (pick these wisely — you don't want a flimsy raincoat, or an umbrella that is falling apart or will fall apart)



A poncho will also work, if you think you can pull it off that is

Active Wear-

– Swimsuit!

I made the mistake of not bringing a swimsuit. During winter-break I took all of my swim-wear back home (Miami, FL), because 1. I didn't think I would be spending the summer in Ithaca, and 2. After those first few winter months I felt like it would never be warm again (those were rough times)

-Reusable water bottle (Bristol Hills water is so good you'll want to stick it in your ear — this is a skit in which staff says water at camp is so delicious that you will want it everywhere, even in your ear, and the staff proceed to pour it

in their ear...they also do this same skit with pudding)

- Sunscreen
- Bug spray (if you are into that kind of stuff)
- Flashlight

Don't do as I did, and forget this ESSENTIAL. Not having a flashlight is why I have several nasty bruises from trying to find my way to the bathroom with nothing but my phone to light my way.

Personal-

- Shower Essentials (including showering flip-flops, or your feet will never be clean)
- Comb
- Toothpaste, toothbrush, etc.

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Meeting upon Meetings!

Posted on **June 30, 2013** by vs337@cornell.edu

Systems Engineering Program

This program focuses on current undergraduate students and it works to promote engineering on a competitive and entrepreneurship level. Most of the outreach activities that faculty in this department of engineering focus on deal with materials that would not be ideal for a summer camp. Though this is so, there is great potential in working with this department in the future in 4-H focus groups like Rocketry; definitely a great contact to keep in mind.

Exploration Station

The Exploration Station is a barely noticeable portable behind the Synchrotron Lab. Never having heard about it, or been to the buildings behind the lab, I was very surprised by how well established their outreach programs were. Though being affiliated with Cornell, the Exploration Station is a very independent body whose outreach work seems to align rather well with the type of STEM activities that 4-H Camps are looking for. Their outreach work consists of providing after school programs where kids are able to learn about physics in an engaging, fun, and informal manner and setting. They also sponsor demonstrations in schools to increase kids' interest in the sciences, especially physics (what Bristol Hills is looking for!). Since the Exploration Station already has well established activities it would be of great benefit to both parties to form a partnership. The possibilities range from members of the Exploration Station going to camp to lead some activities, or camp staff going to Cornell to obtain some STEM education from the ES. Training camp staff would not be something out of the Exploration Station's comfort zone since they also facilitate professional development of teachers.

Office of Undergraduate Biology

The Office of Undergraduate Biology proved to be a wonderful resource in terms of connecting with groups interested in outreach around campus. I was able to connect to a couple of biology professors at the university that have a particular interest in STEM outreach and that have materials and kits which they are willing to share with 4-H Camps. The office was very interested in working with the STEM aspect of 4-H Camps since they have become interested in getting students involved in outreach efforts that extend beyond the Cornell community. Other resources that I was pointed to that would be a good fit to camp were student groups. 4-H Camps had not worked with student groups before hand, yet they seem to be a great fit for the camp.

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A bit more about camp

Posted on **June 27, 2013** by **vs337@cornell.edu**

To better put into perspective where these activities will be implemented, I think it is imperative that I share a little bit more about camp.

4-H Camps are located throughout New York; they are actually a network of camps throughout the state. My adviser, Tim Davis, the 4-H Program Leader for Bristol Hills summer camp has been filling me in on some details about camp.

4-H Bristol Hills Camp:

- is FANTASTIC
- is Near Canadaiqua



- 69.9 miles away
- 1 hr 32 mins away from Ithaca

- Has specialty camps:
- STEM Camp

- Food Science Camp
- Young Woman Adventurers Camp
- Day Camp
- Adventure Camp (and a couple others...)
- Has morning classes and afternoon recreational activities:
- Hiking
- Cooking
- Geocaching
- Archery
- Many more!
- has campers of roughly 5-15 years of age
- is pretty large



— Pretty nice, eh?

- has wonderful staff

Aside from these details, Tim told me about all of the Cornell connections that the camp has solidified throughout the years. So, I am to focus on making connections with other departments, and looking for further outreach opportunities within certain departments they already work with (mainly physics).

These are the departments that Bristol Hills will be working with this summer:

- Cornell Center for Materials Research
- Physics Department
- Human Development Department
- Food Science Department
- Psychology Department

Posted in **4-H STEM Camp Experience**

First Meetings

Posted on **June 27, 2013** by vs337@cornell.edu

Like I mentioned, the first component of my internship consists of localizing resources at the University level so that they could be applied at the camp level. This entails analyzing what is already present in terms of materials, knowledge, and research to later determine how it could be adapted to a 4-H camp.

During the first two weeks of the month I spent at the Cornell campus I met with various faculty and staff. Everyone I spoke to was very responsive and had a substantial amount of interest and experience in outreach. With this being said, some outreach efforts were not necessarily compatible to what the 4-H camps hope to provide to campers or to the specific age groups that the camp caters to.

Below is a short summary of each of the meetings:

Bioenergy & Bioproducts Education Program

Since this is an educational program within Cornell, it mostly focuses on training teachers to incorporate bioenergy and bioproducts concepts into their lesson plans. This is mostly done through workshops that are held during the summer that focus on topics like systems thinking and emphasize certain new state educational science standards by providing lesson plans as examples. Though most of their work focuses on educators, the idea of working with children was of interest to them. I feel that this program can be especially successful if they work with children in summer camps; the setting to present bioproduct topics such as converting vegetable oil to biodiesel, seeing the connection between grasses and sugars, and bioplastic (since camps use a significant amount of plastic products in the dining facilities).

Diversity Programs in Engineering

It was very interesting seeing the type of work that this program within the engineering department was doing. They focused on offering summer programs to high school students at Cornell with the purpose of getting them interested in engineering. They would pair high school students with Cornell faculty engaged in research with aspiration of instigating a general passion for engineering within the participants. Despite their efforts and resources being solely focused towards on-campus activities, I was able to obtain various useful points of references and contacts from them.

Material Science and Engineering

This department is well connected to the Center for Nanoscale Systems which has wonderful educational and instructional kits. These kits are mainly veered towards demonstrating physics concepts that have already been taught in a formal lecture. For this reason, it does not seem that appropriate to form a connection between CNS and 4-H camps, especially since the materials that they provide are very heavy on physics and mathematics (something very few children want to do during the summer, especially during summer camp). Also, equipment that CNS provides has a target age group of high school students, which 4-H STEM Camps do not necessarily target. Thought this is so, the faculty with whom I spoke with has good connections with physics teachers across NY that could definitely bring a significant amount of outreach material and experience to the camps.

Posted in [4-H STEM Camp Experience](#)

Thoughts

Posted on **June 25, 2013** by vs337@cornell.edu

I have been thinking, and from what I have gathered and understood, if I would have ever had the choice of attending a summer camp, a 4-H STEM Camp might have been it.

Either way, my job with the 4-H STEM Camp experience has two different facets:

1. On-campus (Cornell connections)

The first part of my consists of staying on campus for four weeks. During these four weeks I will be meeting with a number of faculty, students, and staff from different departments to inquire about their research and outreach efforts. This has to be the focal point of the CCE internship in terms of learning what extension and outreach entails and forming connections within Cornell that the 4-H STEM Camps could use in the future. Aside from learning about what these individuals are doing within their respective departments, I will inquire about the different outreach activities they engage in, and whether it is a significant portion of what they do. After meeting with them, I would determine what faculty, students, or staff have significant material, experience, and interest in outreach towards veered towards middle school students. I will proceed to create a connection between them and camp and verify the different possibilities their research and work may positively impact the STEM Camp experience for campers. My job is to investigate and report on these campus connections and reason if their interests coincide with the camps to the extent that an outreach partnership would be of convenience to both. This work is particularly essential for the main interest of the 4-H STEM Camps is to connect camp happenings with Cornell. As a land grant research University, Cornell is a great source of information and resources that camps like Bristol Hills can use in order to promote the STEM fields and begin to interest kids from such a young, impressionable age. Basically, what we want to achieve as a whole is to gather the research that is being done in different departments and translate it to a camp setting and for a middle school aged target group.

2. Piloting on-camp activities:

The second portion of my research consists of creating 2-4 activities that I could lead with the campers this summer. These activities I will obtain from my meetings with Cornell students, staff, and faculty. I am to choose the activities that I feel will be the most camp-applicable and attempt to incorporate the relevant science concepts in a manner that gets the children asking questions and mentally engaged in what they are doing. Basically, I will be building a lesson plan for a group of about 15 middle school students in a summer camp. I have some experience working with children, but I have never lead an activity in which they were meant to explicitly learn some relevant science. Though this is so, I do doubt that I will get the necessary guidance and aid from my advisers and the camp staff.

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Pre-work Work

Posted on **June 25, 2013** by vs337@cornell.edu

After spending my first week of summer visiting friends in Boston, I headed back to Ithaca May 27th on what turned out to be a 14 hour commute time. Because my return date was earlier than expected, I had to make do and share a basement space with someone else for three days (we were coined the basement dwellers).

Monday I had my first meeting with Tim and Marcia (my wonderful advisers). We went over some logistical information about STEM camp and we devised a general plan on how I should address the meetings I will be engaging in throughout the next four weeks.

As I mentioned before, summer camp was never in my repertoire of childhood activities so all the information about camp that Tim communicated to me was certainly useful. After hearing him talk about 4-H Bristol Hills, I began to develop my own personal perception of what camp was like and the type of experience that it provided kids with. Before learning about the internship position, I thought that the only goal of summer camp was to engage kids in fun and enjoyable outdoor activities, getting them outside and interacting with other fellow campers. Adding science into what would be considered a regular summer camp was something that had not crossed my mind; wouldn't it just be called a science camp? N O.

The way 4-H STEM Camp works is by incorporating science into the activities they do with their campers. For example, they have a Food Science Camp (in connection with Cornell's Food Science Department) that engage the kids in cheese and ice cream making while not failing to talk about the "science" that make these foodstuffs happen (How would thinks like changing the pH of milk affect the taste of cheese?). So what the 4-H STEM Camp experience attempts to do is incorporate science components into what their campers do. So instead of being bored by formal lectures, campers are introduced to science in a fun environment and in an interesting way. In this manner they associate enjoyable activities with STEM and are more likely to become interested, in some way or another, with STEM. It presents science in an activity that the kids are enjoying and that will urge them to inquire further. What an ingenious concept!

Posted in **4-H STEM Camp Experience**

Intro!

Posted on **June 25, 2013** by vs337@cornell.edu

My name is Valeria San Juan.



That is me (the one in red).

I am a rising sophomore in CALS pursuing a double degree in International Agriculture & Rural Development and SNES.

Here's some soon-to-be-relevant background:

- I was born in Santa Cruz, Bolivia.
- I have lived in Miami, FL for about 8 years.
- I just survived my first real winter and nothing can keep me from being outside.
- This will be my first summer in the United States.
- I have never been to summer camp
- Before Cornell I had no idea what outreach or extension work consisted of.
- I find working with children to be so rewarding.
- Getting people, especially kids, excited about science is potentially one of my favorite things to do.

After my first year of college I am definitely looking forward to my internship. There are not many people that can say they worked with 4-H, were involved in outreach work, AND attended summer camp.

During my time in the 4-H STEM Camp experience I aim to become familiar with what outreach and extension work entails and to learn the skills that are pertinent to a job in outreach.

Posted in **4-H STEM Camp Experience**

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