Hello everyone!

I’m excited to share information for this year’s 4-H Career Explorations! Career Ex is a great opportunity for you to experience life on campus, explore how your 4-H projects can lead to careers, and meet new friends!

I’d especially like to thank our great team of Educators, Volunteers, and Focus Assistants helping to plan and make this event happen.

Please read carefully through these Program Facts to decide how you will participate. Registration is online and needs to be completed by your county 4-H Educator.

I hope to see you at Cornell this June!

Alexa Maille
NYS 4-H STEM Specialist
4-H Career Explorations Event Coordinator
The 4-H Career Explorations Conference is made up of two program tracks – University U (for those entering 8th & 9th grade) and Focus for Teens (those entering 10th – 12th grade). Teens choose the grade appropriate program and then Focus participants select three Focus programs they are most interested in exploring.

**University U:** Participants will be introduced to Cornell's campus through campus tours and participating in six different departmental workshops that will expose participants to a wide variety of topics. Youth will be randomly assigned to these UU programs.

**Focus for Teens:** This is a more intense program where participants spend 3 days with a specific Department. Returning Focus for Teens participants should not apply to the same department program they attended in previous years. See program listings for more details.

### General 4-H Career Exploration Program Policies

#### Behavior
Everyone (youth and adults) is expected to create an inclusive and welcoming environment at Career Explorations and respect the diversity of conference participants (e.g. race, religion, sex, sexual orientation, cultural background, etc.). Everyone will be expected to uphold the NYS 4-H Code of Conduct. All youth and adults are expected to model appropriate behavior and follow guidelines stated on the 4-H Career Exploration registration form. In addition, all Cornell property and Cornell program presenters should be treated respectfully. Delegates acting inappropriately will be sent home at their cost/inconvenience.

**Please Note:**

- Adult chaperones will have the authority to make decisions in the absence of a County 4-H Educator if necessary. Focus Assistants should be involved in decisions about the group as appropriate.

- Chaperones will be expected to intervene in any situation that violates the rules of the event or the basic rights of others, including with youth from other counties. Any problems with youth from other counties should be dealt with immediately and then reported to the appropriate chaperones, Chrys Nestle, and Alexa Maille.

#### Eligibility
The 4-H Career Explorations Conference is open to all NYS youth in grades 8-12. However, registrations are handled through your local county Cornell Cooperative Extension (CCE) 4-H program. CCE County Associations have varying policies about participation in 4-H events, and not all counties participate in 4-H Career Explorations. The NYS 4-H Office encourages CCE Associations to invite all teens involved in their programs to participate in Career Ex.

#### Program Evaluation
Conference participants will be asked to help us learn about the program effectiveness by completing a survey or sharing their reflections. Participation in program evaluation efforts is completely anonymous, voluntary, and there is no impact on program participation if someone decides not to complete a survey. A participant, parent, or guardian may withdraw consent at any time and a participant may refuse any survey request at any time. Parents and participants give or deny their permission to participate in program evaluation efforts by completing the Permission Slip.

#### Other policies:

- Most youth will be assigned a double-occupancy room. Youth cannot switch rooms. Roommates requested on registration forms will be assigned when possible. Participants are responsible for damages that occur to the room during their stay.
- Any disturbances or emergencies should be reported to a chaperone.
- Alcohol, tobacco, and other drugs are strictly prohibited.
- Parents of disruptive participants will be notified & participants will be sent home at parents’ expense.
- Participants must be in the dormitory by 10:00 p.m. Lights out and strict quiet hours begin at 11:00 p.m.
- Photos taken during the program may be used to promote 4-H Youth Development.
Preparing for the Conference

Registration: Participants must register with the local 4-H Youth Development program through your county Cornell Cooperative Extension Office. Registration opens early March and will close June 1 or when programs are full, whichever happens first. This can occur before June 1. Counties will be billed directly for the registration fee and any additional room and board fees as appropriate.

Cost: $260 per participant to cover room, board, and program fees. Early Arrival/Late Departure costs: Double Room per night - $31.00, Single Room per night - $39.00, Breakfast: $8.60, Lunch: $12.60, Dinner: $16.20. Scholarships are competitive but available. Please note: transportation to and from the event is at the participant’s own expense. Some CCE Associations charge additional fees to cover transportation & chaperone expenses.

Scholarships: Scholarship applications are due at the time of registration, or no later than May 1. To apply for a full or partial youth scholarship, please complete the scholarship section of the Registration Form. Scholarships are limited and will be awarded to qualified applicants through a competitive review process. Scholarship applications must be approved by a county 4-H Educator.

Early Arrival: Please indicate your needs on the registration form if your county plans to arrive on campus early. See costs above. Teens arriving early must have a chaperone (we provide chaperones for Focus Assistants). Contact Alexa Maille, ask37@cornell.edu, to make special arrangements.

Chaperones: Counties are expected to provide chaperones in about a 1 to 6 ratio for teens attending. Chaperones may be shared with other counties. Every participant must have a designated chaperone. The state office needs to know about multi-county groups that need to be housed together. The chaperone registration fee is the same as for youth. Chaperones will be expected to supervise youth from other counties during program times and while supervising evening social activities.

Lead Educator: Each Association is expected to have a Lead Educator designated as your group’s main contact, for volunteer supervision, and for crisis and incident management. Lead Educators may be from your Association or another Association.

Cancellation Policy: Cancellations prior to June 1 will not be charged. Cancellations after June 1 will be billed a $100.00 cancellation fee. Same gender, same program replacements are allowed, but need to be registered before arrival at the conference. No-shows will be charged in full.

Chaperone and Participant Orientation: The Delegate Handbook will be available online by early June. All chaperones and participants should review the new handbook prior to coming to Career Explorations. We strongly encourage 4-H Educators to hold an orientation meeting to review this information before coming to campus.

While you’re on Campus

Check In: Your delegation needs to arrive between 10:00 a.m. and 12:00 p.m. on Tuesday, June 27. There are lots of great things to do and see on campus should you arrive early. The delegate handbook will include a listing.

Parking: There is NO PARKING on central campus during the event. Association and personal cars must be left at Cornell Conference lot (CC). Vehicles with “official” plates may park on campus in eligible parking spaces without additional fees being assessed. Parking permits will be available for the CC Lot at registration. If you are in need of handicap parking, please notify the state office in advance.
**Dormitory Housing**
- Chaperones should check rooms upon arrival, noting damages or defective appliances.
- Please use hair dryers in the bathrooms only.
- Linens are provided with rooms including sheets, pillow and pillowcase, one blanket, one towel, one washcloth, and soap. Participants will be asked to make their own beds.
- Participants will have to supply their own towel for the pool.
- Participants may want to bring an alarm clock and a fan.
- If there are problems with the rooms (i.e. light bulbs burnt out), contact staff immediately so that problem can be resolved or noted.
- Youth need to be careful not to lock themselves out of their dorm rooms. Doors close and lock automatically.

**Telephones:** There are no phones in the dorm rooms. Do not use cell phones during program times unless it is part of the program or an emergency.

**Safety:** Even though Cornell has a rather tranquil setting, be assured that serious crimes can and do occur along its pleasant footpaths.
- Youth should never walk alone anywhere on campus at any time.
- Dorm doors should be locked at all times.
- Under no circumstances should youth leave the dorm at night.
- The Safety Division's (Cornell police) phone number is 255-1111.

**Emergencies:** Chaperones will receive a list of campus emergency numbers during orientation.

**Free Time/Recreation:** Some participants may wish to arrive early to meet with Cornell admissions and/or tour the Cornell campus (see handbook for where assistance in arranging tours is available). During evening free time on Tuesday and Wednesday nights, there will be several options for recreation including: a movie, swimming and bowling, billiards, outdoor games, and more. There will also be a quiet lounge open for reading and silent relaxation. During free time activities, chaperones will be assigned to supervise one of the free time activities. If you so choose, you may bring items such as Frisbees, soccer balls, footballs, etc. to use during free time outside, as there is plenty of space for outdoor activities. Evening activities are offered as a time to meet people from around the state. All participants are expected to participate in some form of evening activity with adult supervision and should not be in the dorm before 9:00 pm. If a youth needs to go to the dorm for any reason they need to be accompanied by an adult.

**Curfew:** It is required that all delegates (youth and adults) follow the following schedule.
- 9:00 p.m. Dorms open to youth with their chaperones.
- 10:00 p.m. 4-H Career Exploration programs end. Everyone inside dorms
- 11:00 p.m. Settled in assigned rooms and lights out and phone off.

To have the best possible experience at Career Explorations, youth should be getting at least 8.5 hours of sleep.

**Campus Transportation:** A 4-H Focus Assistant will escort participants to their program or bus pickup every morning. Be on time and prepared to walk about 15-20 minutes to your program destinations. Program gathering and departure times will be listed in the Delegate Handbook within the itineraries for each specific program. Please be aware departure times may vary for specific programs. If there are special transportation needs, please be sure to notify Alexa Maille in advance of the 4-H Career Explorations Conference. Walking is a part of the college experience at a large world-class university like Cornell. Enjoy the beautiful campus and get some healthy exercise - so wear sneakers or comfortable walking shoes!

We will have a Google Map with all the Program Locations pinned to help you navigate campus. Look for it in the Handbook!
Focus for Teens

Title: A Tour of Human Development across the Lifespan

Cornell Department: Bronfenbrenner Center for Translational Research

Maximum Number of Youth Accepted: 20  Minimum Number of Youth Needed: 10

Description
Are you interested in understanding how people learn, grow, and thrive? Are you considering a career in sociology, psychology, neuroscience, medicine, education, public health, or social work? Explore the various phases of human development ranging from infancy to older adulthood. Meet faculty, students, and professionals in the field and discover the many techniques they use to study human behavior. Visit the Cornell Infant Studies Lab where you’ll learn how to study infants who aren’t able to tell us their thoughts, and the Cornell MRI Facility where you’ll learn how the MRI lets us “see” what someone is thinking. Try hands-on research, including interviews with elders about their life experiences. Prepare to be inspired!

Packing Suggestions  Closed-toed walking shoes.

Title: Astronomy

Exploring the Solar System and the Universe

Cornell Department: Astronomy and Space Sciences

Maximum Number of Youth Accepted: 20  Minimum Number of Youth Needed: 10

Description
In this workshop, you will investigate the meaning behind Carl Sagan's famous quotation: "We are made of star-stuff." You will do science and take on the challenge of discovery through hands-on activities. Starting with the Big Bang and ending with the human body, we will trace the 14 billion year journey of a single atom, from the birth of the Universe, through the formation and evolution of stars, to the development of the Solar System, our home planet Earth, and the origin of life.

Packing Suggestions  None

Title: Cardiac Engineering

At the Heart of It All

Cornell Department: Biomedical Engineering

Maximum Number of Youth Accepted: 15  Minimum Number of Youth Needed: 12

Description
You will have the chance to see and discuss how engineering principles are abound in biology and medicine and learn how these principles can be applied to create new, cutting-edge medical therapies. The theme will be “intersection of developmental biology and regenerative medicine to engineer and study hearts.” You will rotate through stations led by graduate students where you will get to grow chick embryos outside the shell, learn how the environment affects cell behavior, identify different structures as they form, including an inside look at the beating heart, learn how imaging technologies are used in medical research, engineer and make gels that are used in biology and in the body, and learn how three dimensional printing can lead to custom-built heart valve replacements. Come ready to learn and have a GREAT time!

Packing Suggestions  Closed-toed shoes; no flip-flops or open shoes in the laboratory
**Title:** Discovering Birds and Nature Exploration  

**Cornell Department:** Cornell Lab of Ornithology  
**Maximum Number of Youth Accepted:** 15  
**Minimum Number of Youth Needed:** 10

**Description**  
Explore the lives of birds through hands-on activities and presentations. Get active and learn bird ID, go on bird walks, and become a citizen scientist. Citizen science is when everyday people partner with professional researchers to do real science. We’ll go behind the scenes for a tour of the Cornell Lab of Ornithology and hear firsthand about career opportunities in ecological research, videography, app development, and media curation from experts in the field.

**Packing Suggestions** Wear close-toed shoes, dress for the weather and spending time outside. Bring your water bottle.

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**Title:** Environmental Engineering  

**Cornell Department:** Biological and Environmental Engineering  
**Maximum Number of Youth Accepted:** 12  
**Minimum Number of Youth Needed:** n/a

**Description**  
Explore what it means to be an environmental engineer! In this program, you will work with graduate students in Biological & Environmental Engineering, meet environmental professionals in the community, and conduct fun experiments. We will learn how microbes can be used to produce useful fuels and chemicals through fermentation and practice some of the analyses that we use in the lab to understand how the microbes are growing and working. We will also focus on several aspects of water quality and treatment. Hands-on activities will show how environmental engineers help protect lakes, rivers, and other waterways. We will work in teams to design filters to produce clean drinking water tailored to the needs and cultures of different communities around the world. Finally, we will visit the Ithaca wastewater treatment plant to see first-hand how wastewater is converted into biogas—a source of renewable energy—through anaerobic digestion.

**Packing Suggestions** Bring water shoes or shoes that you don’t mind getting wet in a stream.

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**Title:** Exploring Mechanical and Aerospace Engineering  

**Fluids, Solids, and Dynamics**  

**Cornell Department:** Sibley School of Mechanical and Aerospace Engineering and SiGMA (Sibley Grads in Mechanical and Aerospace Engineering)  
**Maximum Number of Youth Accepted:** 20  
**Minimum Number of Youth Needed:** 10

**Description**  
Program will be divided into 3 parts (Fluids, Solids, and Dynamics) each representing the main area of study in Mechanical and Aerospace Engineering. The fluids section will use hands on demonstrations to communicate the physical properties of fluids (eg. comprehensibility and surface tension). You’ll work in a team in a bridge building challenge for the solids section. Then, teams will build a rocket to explore dynamics and the principles of projectile motion and stability.

**Packing Suggestions** The rocket launch activity will be outside. Bring a light coat and sun protection.
**Title:** Feeling the Force  
*How our cells grab, pull, and sense material surfaces!*

**Cornell Department:** Meinig School of Biomedical Engineering  
**Maximum Number of Youth Accepted:** 12  
**Minimum Number of Youth Needed:** 6

**Description**
Learn about how the cells in our bodies “sense” the micrometer-scale world around them. You’ll learn how to make materials to culture cells. You’ll also propose, test, and analyze experimental hypotheses. You’ll explore possible career pathways within biomedical engineering.

**Packing Suggestions** Long pants and closed toe shoes.

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**Title:** Fossil Collecting  
*and the Science of Paleontology*

**Cornell Department:** Paleontological Research Institution and the Museum of the Earth  
**Maximum Number of Youth Accepted:** 10  
**Minimum Number of Youth Needed:** 5

**Description**
Explore the science of paleontology by creating your own fossil collection from New York state fossils. Tour behind the scenes at the Museum of the Earth, meet staff paleontologists, learn fossil preparation techniques, and travel to a fossil collecting site nearby to start your own research collection. On the final day, put all your knowledge together to create a research fossil collection of your own.

**Packing Suggestions** Please wear closed-toe shoes for the fossil collecting. Sun screen and insect repellent if desired. A backpack to bring these can be nice.

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**Title:** Genetics and Embryonic Development

**Cornell Department:** Molecular Biology and Genetics  
**Maximum Number of Youth Accepted:** 10  
**Minimum Number of Youth Needed:** 6

**Description**
All of us were once embryos, being shaped into babies inside the cozy environment provided by our moms. In this program, participants will get a peek at the intermediate steps of this process by dissecting chicken and mouse embryos at different embryonic stages. Participants will also analyze mutant mouse embryos that model human congenital malformations and will be introduced to some of the molecular biology techniques commonly used in genetic research. Through this program, you will learn how results from developmental biology studies are applied for the diagnosis of human birth defects and genetically inherited diseases.

**Packing Suggestions** The lab environment necessitates closed shoes (no flip-flops) and preferably long pants (although we have lab coats for those wearing shorts). The AC system in our building can not be adjusted and it tends to be chilly, we advise students to bring a light jacket.
Title: **Geospatial Technology Exploration**
*Making Maps with GPS, GIS and Remote Sensing*

**Cornell Department:** Institute for Resource Information Sciences, Section of Soil and Crop Sciences, School of Integrative Plant Science, CALS

**Maximum Number of Youth Accepted:** 20  
**Minimum Number of Youth Needed:** 10

**Description**
From finding your way with a Global Positioning System (GPS) receiver, to exploring the world from the bird's eye view with satellite, aircraft and drone cameras, making maps has never been more exciting. In this hands-on/feet-on workshop, learn the basics of GPS navigation around the Cornell campus, make maps that tell meaningful stories using Geographic Information System (GIS) software, and explore your neighborhood from the aerial perspective using the latest in airborne imagery. We'll be outdoors and indoors, in the computer lab and the engineering design classroom.

**Packing Suggestions**  Be prepared to walk campus in any weather (walking shoes, rain gear)

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Title: **Is it raining out?**  
*Capturing and mapping data with sensors. raspberry pi and Minecraft and more*

**Cornell Department:** Cornell Cooperative Extension Administration Information Technology

**Maximum Number of Youth Accepted:** 20  
**Minimum Number of Youth Needed:** 8

**Description**
Let’s connect the world outside to the world on our screens! Sure, you could look out the window, but this is way cooler. You will use Raspberry Pi’s, external sensors and Minecraft to create devices that monitor the environment and can present the data in interesting ways using Minecraft (and other programs). Not a programmer? That’s ok – we’ll also have a bunch of littleBits to work with. No programming experience required.

**Packing Suggestions**  None.

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Title: **League of Coders**

**Cornell Department:** Mann Library

**Maximum Number of Youth Accepted:** 20  
**Minimum Number of Youth Needed:** 5

**Description**
Interested in developing your own website? Considering a career in web design and development or coding apps? These are exciting fields with plenty of room to be creative and innovative! In this module, we’ll start with the basics - HTML and CSS - and then learn how to integrate data and add fun user interactions into your site by writing conditionals, loops and functions using Javascript. No experience required.

**Packing Suggestions**  None
**Title:** Learning to Program Robots with Baxter

**Cornell Department:** Computer Science  
**Maximum Number of Youth Accepted:** 12  
**Minimum Number of Youth Needed:** n/a

**Description**  
This program is designed for students with no programming experience. Using a simple drag-and-drop programming environment, students will program our humanoid robot, Baxter, to solve puzzles by stacking colored blocks. In the process, students gain computational thinking skills and learn about career paths in computer science and robotics.

**Packing Suggestions** None

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**Title:** Masterpieces in our Midst  
*What It’s Like to Work in an Art Museum*

**Cornell Department:** Herbert F. Johnson Museum of Art  
**Maximum Number of Youth Accepted:** 15  
**Minimum Number of Youth Needed:** 10

**Description**  
You will be involved in planning a museum program from “A” to “Z”--designing a museum program based on a selection of artwork from the Johnson’s collection. You will do research about select work/s of art in the Museum’s collection and create and lead a hands-on workshop inspired by the selected artwork/s. You will have access to behind-the-scenes operations at the Johnson Art Museum. You will be introduced to Johnson Museum educators and learn about their career paths, how they got to working at the Johnson, and the role that each plays within the department of educators at the Museum.

**Packing Suggestions** None.

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**Title:** Media Corps

**Cornell Department:** University Communications  
**Maximum Number of Youth Accepted:** 18  
**Minimum Number of Youth Needed:** n/a

**Description**  
Participants will see what we offer through University Communications on a Studio Tour. We will explore audio work, radio, and video. Time will be provided to work as a team. We will go over editing styles, producing footage, lighting, camera techniques, and then have time for everyone to work on 3-minute videos which can be uploaded to NYS 4-H’s YouTube channel. You may be filming in multiple places around campus so be ready to walk around. Participants are encouraged to bring their own devices to learn how to use these skills at home. This is a great training opportunity for youth interested in the State Fair Media Corps.

**Packing Suggestions** Smartphones, tablets, or iPods if available, and the USB cord that connects with it. If you don’t have your own equipment, you will be able to share with someone else. Walking shoes.
**Title:** Our World of Polymers and Nanoparticles

**Cornell Department:** Chemical and Biomolecular Engineering  
**Maximum Number of Youth Accepted:** 15  
**Minimum Number of Youth Needed:** 7

**Description**  
Ever wonder how computer chips are made? Or what makes ice cream so good? Or how antibiotics work? Chemical engineers explore these phenomena every day to try to solve problems with modern day medical challenges and the creation of specialized materials. In our laboratory, come explore how nanoparticles and polymers can be used to improve drug development and materials. Students will make nanoparticles and polymers and explore their material and biological applications. We will also discuss the diverse set of careers for chemical engineers, ranging from the petroleum industry, to healthcare, to microelectronics, and even the food industry.

**Packing Suggestions** Closed-toed shoes; no flip-flops or open shoes in the laboratory

**Title:** So you want to be a Food Scientist?  
*Pick your pathway as you build your own ice cream company*

**Cornell Department:** Food Science  
**Maximum Number of Youth Accepted:** 20  
**Minimum Number of Youth Needed:** 12

**Description**  
Teams of participants will create their own ice cream brand and develop a flagship ice cream flavor. Creativity is a must in choosing flavors and production strategies for a unique and marketable product. However, along the way students will be challenged with various snafus that food scientists must use technical skills to solve. What engineering principle can be adjusted to improve ice cream texture? How do ingredient interactions impact ice cream flavor, and are consumers accepting of these ingredient combinations? What do you do if your company is implicated in an outbreak of foodborne disease? Students will be on their toes coming up with lab-based solutions to these challenges and will give a final “pitch” to professional food scientists based on their product design.

**Packing Suggestions** Lab appropriate clothing - pants and closed-toed shoes

**Title:** Vet for a Day

**Cornell Department:** College of Veterinary Medicine  
**Maximum Number of Youth Accepted:** 25  
**Minimum Number of Youth Needed:** 15

**Description**  
You will engage in hands-on learning as you perform veterinary physical exams on small and large animals, and learn the ropes of dissection in our anatomy lab. You will also hear presentations about veterinary school admissions, tour the hospital, and participate in interactive case presentations by faculty.

**Packing Suggestions** Close-toed shoes, tie back long hair. We prefer if you do not wear shorts or dresses since we will be in a lab setting for part of the time. You may bring a lab coat for the dissection if you have one, but we will provide disposable lab coats too.
**Title:** Women in Science

** Cornell Department:** Human Development  
**Maximum Number of Youth Accepted:** 25  
**Minimum Number of Youth Needed:** n/a

**Description**  
Do the toys you have as a child shape your future career goals? Do stereotypes affect your academic performance, even without you being aware of it? These are the types of questions we explore in “Why aren’t there more women scientists?” In addition, you will get to meet women scientists and learn about their diverse research areas within the field of psychology and human development including forensic psychology and neuroscience. This program will give you a glimpse of what it’s like to be a social scientist in real life. Participation and activities are the best part! Come learn about the real world of psychology and human development you never hear about in school – and prepare to be entertained.

**Packing Suggestions** Something to wear if the classroom is cold.

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**Title:** Youth Grow!  
**Become a Leader in the Local Food Movement**

** Cornell Department:** Cornell Garden-Based Learning  
**Maximum Number of Youth Accepted:** 20  
**Minimum Number of Youth Needed:** 8

**Description**  
Have you ever savored a juicy peach grown here in NYS? Are you inspired by those who get involved with everything from creating their own blog, to working with the White House garden? Are you passionate about working for environmental sustainability and healthy communities? The local food systems movement is gaining momentum and there has never been such an exciting time to jump on board! This workshop will provide you with the preparation, leadership skills, and tools needed to get involved in the local food systems movement. You’ll interact in lively activities to take home and re-create there; visit community leaders at local farms and garden and get your hands dirty there; and learn how to create meaningful and effective change in your own community. You’ll walk away with both an action plan to help get you started and a network of peers and mentors to guide you in the process! Passionate teens are urged to enroll and to be prepared to create something big.

**Packing Suggestions** Comfortable clothing that can get dirty, shoes for walking, water bottles, sunscreen.
University U

**Title:** Animal Adventures  
**Cornell Department:** Animal Science

**Description**  
Find out how you can turn a passion for animals into a career. Many people know the animal science department prepares students for entry into animal and human medical professions, yet did you know animal facility managers, technicians, nutritionists and animal trainers are viable career path choices too? Visit with some of our campus partners to discover more animal related careers in fields that benefit society with hands-on experiences. Who knows...you may be the next animal scientist to make a new discovery.

**Title:** Breaking Bonds and Changing Color  
**A Mechanical Engineering Take on Chemistry**  
**Cornell Department:** Mechanical and Aerospace Engineering

**Description**  
This program will introduce students to mechanochemistry - using force to perform chemistry - an exciting new means for designing smart materials. Following a concept introduction and demonstration of mechanical testing of materials, students will work in groups to construct their own macroscale version of a mechanochemically active material.

**Title:** Climate Leaders in the Making  
**Cornell Department:** Cornell Institute for Climate Smart Solutions

**Description**  
Climate change is one of the most important issues of our time. Do you know what it means for you and how you can become a climate change leader and expert? In this session, students will get to experience climate change from all angles through hands-on scientific activities, fun and informational videos, and an interactive “Climate Leader” role-playing game. We will also explore unique opportunities for everyone to get involved in climate change now and in their future careers, from art and photography, to science and technology.

**Title:** Have a Blast with Rocketry!  
**Cornell Department:** Cornell Laboratory for Accelerator-based Sciences and Education (CLASSE)

**Description**  
Build and launch your own bottle rocket! Explore Newton’s laws of motion and experiment with different rocket designs and fuels to get your rocket to travel the farthest. Students may take home their rockets.

**Title:** How to Engineer Really, Really, Really Small Devices  
**Cornell Department:** Cornell NanoScale Facility

**Description**  
Nanotechnology is in use all around you....computer chips, biosensors, smart fabrics, cancer treatments and everyday items like stain-resistant pants and sunscreens. Being able to make devices and materials at the same size scales as individual molecules or cells is a powerful way to improve our lives, and it happens in clean room facilities like the one at Cornell. Engineers, physicists, chemists, materials scientists, biologists and other scientists come to Cornell's NanoScale Facility and make small devices. Visit the facility to see how scientists harness the power of the nanoscale and try your hand at one of the most important techniques, called photolithography.
**Title:** From an electromagnetic wave to an internet backbone – How We Control the Flow of Light  
**Cornell Department:** Materials Science and Engineering

**Description**  
Learn about light as a wave, utilizing this effect to flow information, and lastly how to use optical materials to control the flow of light through hands-on activities. Explore reflection, refraction, and diffraction.

**Title:** Legendairy  
**Bridging the Gap Between Science and Business**  
**Cornell Department:** Biomedical Engineering

**Description**  
Cornell iGEM will present their 2016 synthetic biology project Legendairy, which was nominated for Best Human Practices at the international competition. You will learn about synthetic biology concepts/techniques and the ways science and business interact in career fields like biotechnology. You will work in groups to create a business that could solve the real-world question, and then give a “pitches” of your ideas.

**Title:** Mission to Mars  
**Cornell Department:** Mechanical and Aerospace Engineering

**Description**  
You will work in groups on a set of NASA mission requirements. Each group will work on designing one mission subsystem (e.g., power, communications, life support), with the caveat that changes by one team will affect outcomes of the other teams. You will have to collaborate within and across teams to reach a mission design that satisfies the mission goals.

**Title:** Nutritional Artist  
**Cornell Department:** Food Lab, Division of Nutritional Sciences

**Description**  
Explore the topic of “easy” nutrition. We will prepare a popular dish, focusing on ways to make it easier to prepare and more nutrient dense. We will talk about food science, the reasons why we cook things a certain way, and careers in cooking, food, or nutrition. Participants will be encouraged to cultivate a sense of individual expression through food while learning how to have fun with it at the same time.

**Title:** Polymer Chemistry  
**Cornell Department:** Center for Sustainable Polymers/Department of Chemistry and Chemical Biology

**Description**  
You will learn about plastic polymers and will do an experiment where you convert a compostable drink cup into a cleaning solution. Recycling, biodegradable plastics, and polymer properties will also be introduced.

**Packing Suggestions for all UU programs**  
Students must wear pants and closed toed shoes (no sandals or flip flops) for safety. Exposure to hay, fur, feathers, dust, and latex is possible. Be prepared if you have allergies. Disposable boots, gloves and lab coats will be provided as needed. Wear clothes that would be ok to get muddy or (potentially) splattered with food. Please bring a writing utensil and paper. You may want to bring a bag to carry your stuff. You will have to put all shiny objects away in your pockets or bag for the Flow of Light program.
### CAREER EXPLORATIONS CONFERENCE
#### Schedule at a Glance - Draft

**Tuesday**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 AM - 12:00 PM</td>
<td>Check In</td>
<td>RPCC (upper side)</td>
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<tr>
<td>12:30 PM</td>
<td>Youth Orientation</td>
<td>Court Hall green space</td>
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<tr>
<td>12:30 PM</td>
<td>Chaperone Orientation</td>
<td>RPCC 2nd Floor Auditorium</td>
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<tr>
<td>1:30 - 2 PM</td>
<td>Lab Safety Training – for specific Focus groups</td>
<td>RPCC 2nd Floor Auditorium</td>
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<tr>
<td>1:30 PM</td>
<td>Leave for programs – groups not in Lab Safety</td>
<td>Court Hall green space</td>
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<tr>
<td>2 - 4:30 PM</td>
<td>Focus groups: see specific group schedule</td>
<td>Focus groups: see group schedule</td>
</tr>
<tr>
<td>2 - 3 PM</td>
<td>UU: Opening Presentation</td>
<td>Baker</td>
</tr>
<tr>
<td>3 - 4:30 PM</td>
<td>UU: Campus Tour</td>
<td></td>
</tr>
<tr>
<td>5 - 6:30 PM</td>
<td>Dinner and County Meetings</td>
<td>RPCC Dining and Dorms</td>
</tr>
<tr>
<td>6:30 PM</td>
<td>Walk to Opening Assembly</td>
<td>Meet County outside of RPCC</td>
</tr>
<tr>
<td>7 - 8:30 PM</td>
<td>Opening Assembly</td>
<td>Appel Fields (rain location – Helen Newman Gym)</td>
</tr>
<tr>
<td>8:30 - 10 PM</td>
<td>Free Time and Recreation</td>
<td>RPCC, Gym, Pool, and Bowling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>in Helen Newman Hall, Outside</td>
</tr>
<tr>
<td>9 PM</td>
<td>Dorms open for youth with their chaperones</td>
<td></td>
</tr>
<tr>
<td>10 PM</td>
<td>County Check In – youth must be in dorms!</td>
<td>Dorms</td>
</tr>
<tr>
<td>11:00 PM</td>
<td>Lights Out</td>
<td></td>
</tr>
</tbody>
</table>

**Wednesday**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 - 8 AM</td>
<td>Breakfast – arrive no later than 7:30 AM</td>
<td>RPCC Dining</td>
</tr>
<tr>
<td>Varies</td>
<td>Leave for programs – check your schedule</td>
<td>Court Hall green space</td>
</tr>
<tr>
<td>9 AM - 4:30 PM</td>
<td>Programs - see specific schedules</td>
<td>See group schedule</td>
</tr>
<tr>
<td>12 - 1 PM</td>
<td>Lunch</td>
<td>Physical Sciences Atrium</td>
</tr>
<tr>
<td>5 - 6:30 PM</td>
<td>Dinner and County Meetings</td>
<td>RPCC Dining and Dorms</td>
</tr>
<tr>
<td>7 PM - 9 PM</td>
<td>Free Time and Recreation</td>
<td></td>
</tr>
<tr>
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<td></td>
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<td>11:00 PM</td>
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**Thursday**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 - 8 AM</td>
<td>Breakfast and Checkout</td>
<td>RPCC Dining</td>
</tr>
<tr>
<td>Varies</td>
<td>Leave for programs – check your schedule</td>
<td>Court Hall green space</td>
</tr>
<tr>
<td>9 AM - 12 PM</td>
<td>Programs - see specific schedules</td>
<td>See group schedule</td>
</tr>
<tr>
<td>12:15 - 1 PM</td>
<td>Closing Ceremony and Send Off</td>
<td>Statler Auditorium</td>
</tr>
<tr>
<td>1:15 - 2:15 PM</td>
<td>Lunch</td>
<td>RPCC Dining</td>
</tr>
</tbody>
</table>