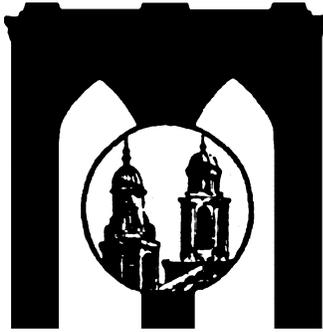




Midwood High School Research Program Science Fair 2011



2011 Midwood High School Science Fair

25 May 2011 — 3:30 to 5:30 PM

David Cohen — Principal
Michael McDonnell — Assistant Principal
Tovia Rosenfeld — Assistant Principal
Glenn Elert — Research Coordinator
Jennifer Sullivan — Research Teacher
Jessica Ross — Research Teacher
Denise Aubrey — Research Teacher

Timeline

Period 3–9

Sophomores park boards in A214 (Research Room)
Sophomores deliver snacks, drinks, plates, etc. to room A300 (AP's Office)

1:40 PM (Period 9)

Junior and Senior judges congregate in library
Junior and Senior tasks are explained
Junior and Senior judging packets distributed (time to read abstracts)

2:30 PM (Period 10)

Scheduled classes and tutoring on 3rd floor annex moved to main building
Junior and Senior judges perform assigned tasks
Rooms inspected
Judges use assignment packet as ticket for snacks in room A313 (Physics Lab)

3:20 PM (Period 11)

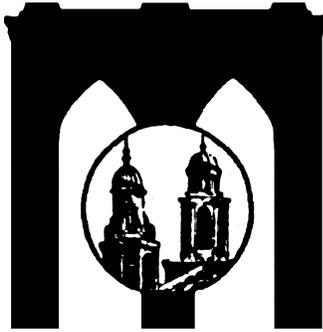
Teacher and alumni judges meet in A317 (Prep Room) for judging packets
Sophomores move to assigned rooms, boards already in position
Sophomores given time to make adjustments to boards and self
Rooms inspected
Judging begins sometime between 3:30 and 4:00

5:00–6:00 PM

Judges return to room A313 (Physics Lab) with completed packets (calculators available)
Judges now have access to sandwiches in room A313 (Physics Lab)
Rooms inspected
Sophomores return boards to A214 (Research Room)
Sophomore teachers provide students with color-coded food tickets
Sophomores allowed in room A313 (Physics Lab) in groups of ~25 by ticket color
Last call for food
Juniors and Seniors assist with clean up

Ongoing

Symposium for SUNY Albany students held on 2nd floor annex (room TBA)



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Judges

Teachers

Mary Bomba, Tom Canepa, Leila Cohen, Margaret Desimone, Elizabeth Fenamore,
Kevin McMahan, Joseph Reilly, Jesse Roehrich, Barry Saines, Howard Spergel,
Alan Stack, W. Tong Lung

Alumni

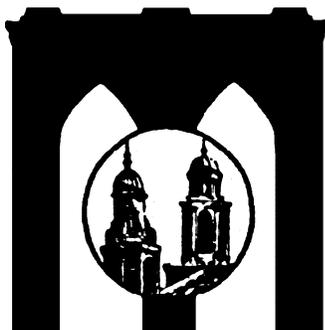
Alex Afanasyev, Sania Ahmed, Rabia Ahsin, Anika Ahmed, Natasha Babar,
Santina Bonsignore, Stephen Braverman, Amanda Chan, Laura Cheng,
Regina Gurevich, Stephani Heyligar, Simon Hoang, Irene Huang, Ting Yu Huang,
Rabia Iqbal, Ednerlande Jean, Lisa Lin, Kimberly Lau, Lima Nusrat, Theresa Law,
Clarice Lee, Ying Louie, Nicholas Macaluso, Annie Nguyen, Leon Telis,
Christine Truong, Lawrence Tse, Benny Wong, Vernon Wu, Julian Yuen

Seniors

Tamara Charles, PeiLing Chen, Joseline Cruz, Kirill Grinberg, Amy Guan,
Tayeba Hasan, Kimberley Itskov, Avis Karpman, Rachel Kehinde, Margaret Lee,
Rebecca Leger, Stephanie Lew, Yvonne Li, Wenona Lok, Anastasiya Matveyenko,
Humera Mohammad, Carmen Mui, ManYee Ng, Nicole Ng, Whitney Nimitpattana,
Francisca Onyiuke, Mercy Palomeque, Nafi Shabnam, Rose-Ann Thomas,
Zhaona Wang, Wen Shan Xue, Andy Yee, Wendy Yu, Fuad Zaher

Juniors

Brandon Abrams, Mohamed Adnan, Emanuel Bazov, Choi Chao, Amy Chen,
Mercede Chen, Stephanie Chen, Yi Chen, Chi Vein Cheng, Matthew Chin, Tianna Chin,
Ken Han Chiu, Andrew Dabydeen, Dalia Fabius, Rinnell Hazel, Irene He, Aya Itani,
Tayyaba Jabeen, Tammy Jiang, Farjana Kabir, Sachini Kahanda, Mert Keceli,
Meral Kerim, Jessica Khaimova, Rebecca Khaimova, Mustufa Khatri, Andrey Kovalev,
Xiao Ling Kuang, Kevin Lee, Joan Li, Michelle Li, Dong Hong Liang, Sharon Lu,
Andrey Moiseyenko, Ian Morel, Albert Murzakhanov, Vivian Ng, Candy Nguyen,
Zoha Noor, Sadia Nusrat, Emily Pan, Sana Parvaz, Faiyaz Rahman, Faryal Razzaq,
Natalya Romanyak, Samuel Rubinstein, Leroy Sin, Hosni Sirhanshiraji, Sandy Tam,
Jia Wen Tan, Mark Trosman, Sophia Tse, Christina Tsoi, Joshua Wadler,
Hui Ying Wang, Hai Yan Wen, Megan Wong, Joey Wu, Raymond Wu,
Elizabeth Xochimiltl, Emilee Yang, Amanda Ye, Jacinda Zhou, Ya Qun Zhou



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Participants

- | | | | |
|--------|--|--------|--|
| 314-15 | Alexander Anastasiadi Raja Nafeel Khan
Ready, Set, Melt! | 319-15 | Elena Chung
Sunscreen or Unscreen |
| 320-12 | Aiysha Ashfaq
Polyethylene or Polyvinyl Chloride | 314-14 | Demitria De Riggs
Which Soda Is Worse for Your Teeth? |
| 320-02 | Mahmud Ashik Kordaye Hunt
Salt Conductivity | 314-19 | Ryan Fraser
Inhibition of Tiny Wildlife |
| 318-04 | Onycha Banton Asia Wynn
Defenseless Bacteria | 314-04 | Richard Gandolfo
Battle of the Products Against E. coli |
| 320-11 | Louis Barbero
Salt's effect on copper corrosion | 319-07 | Jasline Garcia
The Wonders of a Dandelion |
| 316-01 | Isabela Bertani
Citrus fruit | 318-17 | Zachary Gitman
Which Electrolytes Are Electronic |
| 320-17 | Roxana Bravo
The Effect of Sports Drinks on a Female
Athlete's Endurance | 314-09 | Kayla Gittens Karina Mitrova
Carbs make you gain, but will they help relieve
pain? |
| 318-07 | Maggie Cai
Age Away! | 316-04 | Anna Guo Evelyn Veliz
Slimy Likes It! |
| 314-05 | Danielle Cano-Garraway Ramsha Farooq
Ready, Set, DRINK! | 319-14 | Leah Harrison
Green, Brown, or Clear? |
| 316-13 | Samantha Cham Xiao Wen Ren
What vitamin helps you see? VITAMIN C! | 319-02 | Janae Headly
Rain, Rain, Go Away! |
| 316-15 | Matthew Chan
Be Wise and Sanitize | 316-06 | Fabliha Hoque
Sugary Oranges |
| 318-08 | Shireen Chan
It's Time to Sprout, Little Beans! | 314-12 | Israt Hossain
Dirty Mouth! |
| 320-16 | Solomon Chan
Under Armour vs. Cotton Shirts: Who Dries
Faster? | 318-14 | Sakir Hossain
A clean smile is the best smile |
| 318-02 | Ashley Charles Nyah Smith
Let's talk about acne! | 316-17 | Mandy Huang
Alcohol in Bacteria |
| 316-02 | Anna Chen
Add Some Beats to Those Moves | 316-08 | Ramin Ikhiilov
Truth to the Labels |
| 314-18 | Earvin Chen Mehmet Ozturk
Could switching to hand sanitizer really kill
99.9% of bacteria? | 318-19 | Yao Jiang
Mold says, "I Like it Wet!" |
| 319-11 | Tommy Chen Khizar Siddiqui
Surface Friction | 316-14 | Madina Khidoyatova
Mr. Beethoven, help me remember! |
| | | 316-07 | Sarah Khoja
Eggciting Eggsperiment |

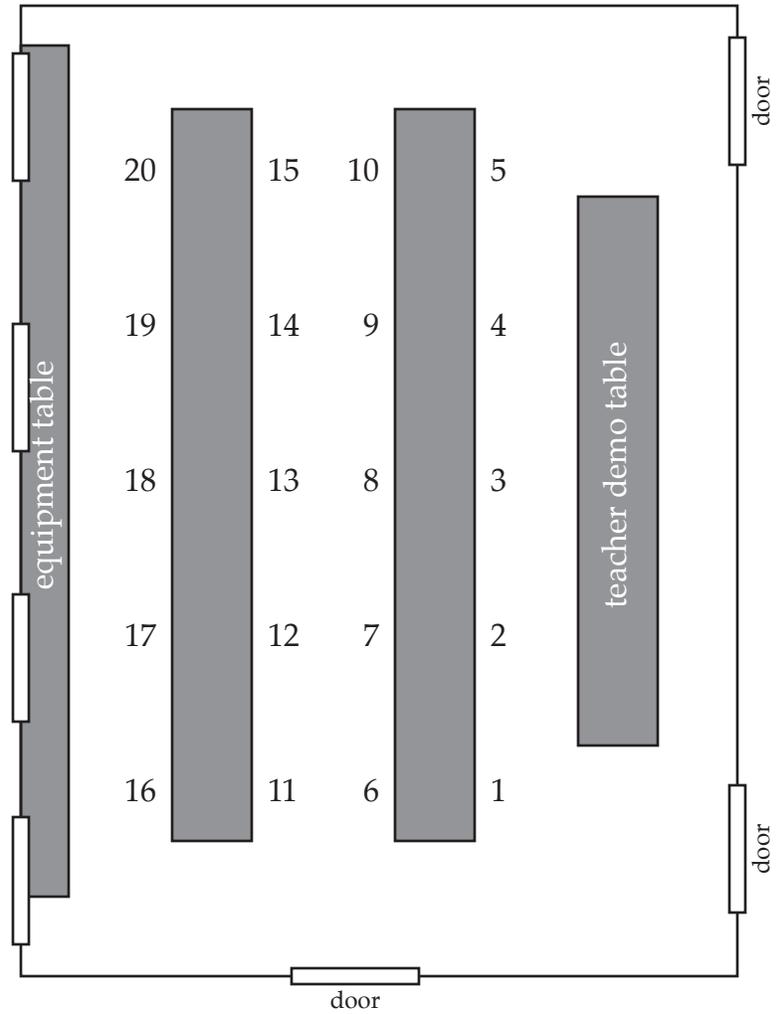
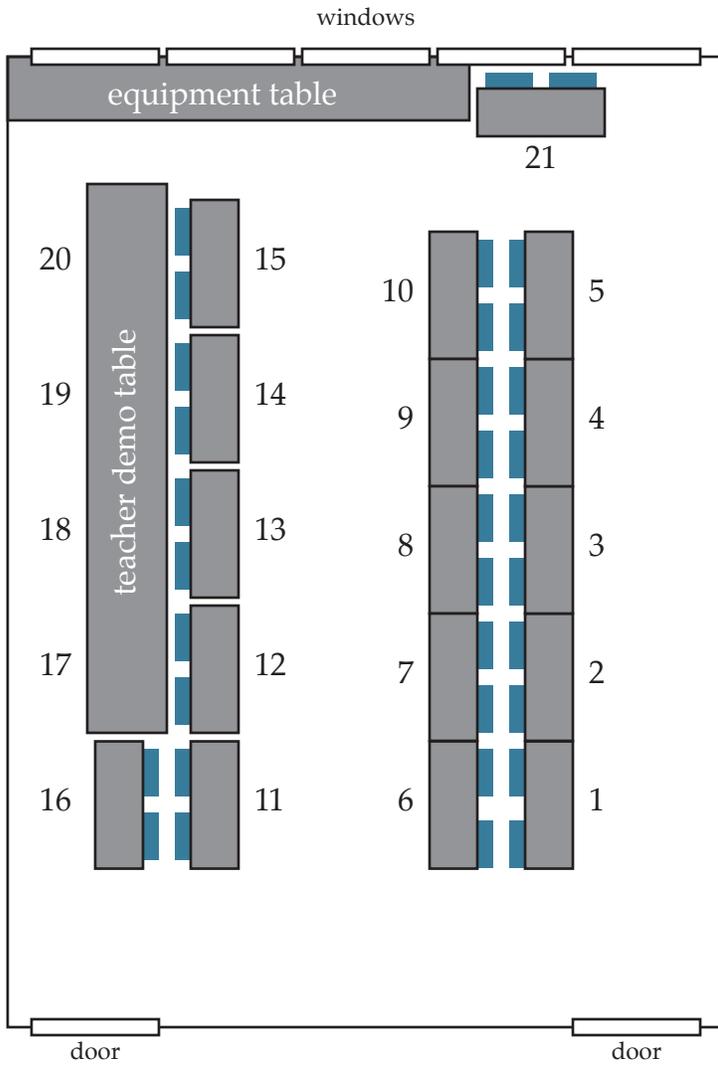
- 319-18 Michael Kotlyar
Laundry Madness
- 318-01 Diana Koval
What is texting doing to you?
- 318-18 Alex Kurtov Or Mossaiov
Color the ice away!
- 320-19 Olivia Kyi Verna Zhao
Puzzles for You!
- 319-09 Jasmine Lam
Which One? Onion, Garlic, or Ginger? Study on E. coli.
- 314-02 Cindy Lee Stella Chen
Kimchi Chemistry
- 316-09 Nicholas Lee
Music to my ears
- 314-17 Judy Li
Oily Iodine
- 320-07 Winnie Li
Watch Where You're Going!
- 320-06 Winnie Li Daniel Thornton
The amount of bacteria found on keyboards (Morning vs. Evening)
- 314-13 Vanessa Liang
Spicy Bacteria
- 316-03 Leo Liao
The Rate of Enzyme Activity
- 314-06 Dao Quan Lin
Can Tide GAIN All the Prize?
- 314-11 Julia Lin
Liquid Viscosity
- 318-15 Ying Lin
Squiggly Clean Face!
- 319-03 Elizabeth Lipov
Can You Multi-Text?
- 314-10 Andy Liu
Different Hue of Fabrics
- 320-05 Pamela Liu
The Stroop Effect: Female vs. Male
- 320-13 Ying Q. Liu
Freeze Up Water!
- 316-18 Artan Ljukovic Mikhail Khoshayev
Out for The Kill!
- 319-05 Tiffany Loi Hamna Muzammil
The pH of Juices at Different Temperatures
- 314-03 Tiffany Lui
Little Lights
- 320-08 Lily Luo Kelly Tan
It's a small world after all
- 319-17 Gabrielle Lynch
Anything You Can See I Can See better!
- 318-11 Zoe Ma
Eyes on the Side of Your Head
- 318-21 Rui Chang Mei Rabije Cekovic
Wash your dishes, clean your planet
- 318-06 Vlad Moraru
More Volts, More Light
- 316-11 Irina Nehai Kelly Shi
Bacteria Makes Millions of Friends
- 316-20 Jenny Ng
Will hearing or reading help you memorize better and faster?
- 316-10 Linda Ngo
Cool It Down!
- 316-12 En Nekema Noel
Bacteria Beware
- 314-21 Svetlana Pushkar
Something Smells Fishy
- 320-04 Syeda Rassol
Which acne medication is the most effective on bacteria?
- 318-13 Ganatheipan Raventhirarajah
Laser Block
- 319-19 Isabella Regine
HOT OR COLD
- 316-16 Denise Roa Pena
Can Coke Vanish Meat?
- 320-18 Ziva Rubinstein
Sugar Rush
- 319-04 Amanda Rueda
Burning Sensation
- 316-19 Sara Saad
Is Permanent Forever?
- 318-16 Zainab Saleem
Flash Those Pearly Whites
- 316-21 Orit Sharf
Debbie Meyer's Green Bags... Do They Really Work?
- 320-15 Roman Shayko
The Effect of Mouthwash on Bacteria
- 319-06 Crystal Soo
A Plant's Favorite Food
- 319-10 Nazneen Sultana
Go Bananas!
- 319-20 Randal Tam
Repetition and Memory

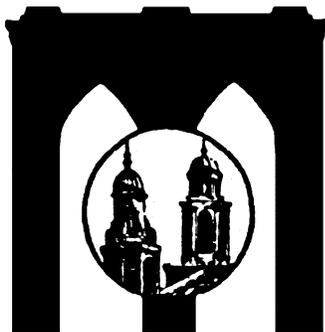
- 314-01 Timothy Tan
Is This the Right Tap Water for You?
- 320-03 Yuyi Tan
Permanent Stain?
- 314-08 Cyndi Tlatelpa
Yummy! The Fatness in Beef!
- 319-16 Jason Vayner Ron Baazov
Neutralizing Stomach Acidity: The Natural Way
- 319-13 Brian Volfovskiy Faina Ablyazova
Saturated Fat in Oils Tested by Tincture of Iodine
- 318-05 Imani Whaley
Don't Let the Pollutants Keep You Down
- 318-03 Justin White
CSI: Midwood
- 320-01 Aricksha Wilshire
Wait! Don't throw out your veggies or fruits!
- 320-14 Klaudia Wojciechowska
Who's your Sugar Daddy?
- 320-10 Kate Wong
Bacteria vs. Disinfecting Wipes
- 319-01 Michelle Wong Sophia Li
Orange You Thirsty for Some Vitamin C?
- 314-07 Sandy Wu
Zoom to the Finish Line
- 318-10 Yong Wu
Make it Grow
- 318-09 Jessica Xu Veronica Ceselka
The Effect of Cleaning Products on E. coli
- 314-20 Jennifer Yau
How "green" are your clothes?
- 319-12 Hui Shan Yin
Can You See Me Now?
- 316-05 Emily Yip
Shield Yourself from Ultraviolet Rays
- 318-20 Prianka Zaman
Bitter Science!
- 318-12 Angela Zhang
Which is more effective: hand sanitizer or hand soap?
- 319-08 Catherine Zhang Diego Delgado
Out of Breath
- 320-09 Lawrence Zhang
Yum Yum Gum Gum Bacteria Poof!
- 314-16 Nina Zhang
The Effect of Salt on the Freezing Point of Water

Room Arrangements

A314, A316, A318, A320

A319 (Chemistry Lab)





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Abstracts

314-01 Is This the Right Tap Water for You?

Timothy Tan

(Aubrey – Environment)

There it is. After a long and tiresome run without any break, barely able to see anything either. You see what you need most. Water. Tap water. A water fountain is right in front of you. You take a few sips and you feel rejuvenated. The tap water's quality is important. As it used as drinkable water for people, what's in the water will affect our body's overall health. The problem of this experiment is New Jersey water better quality than New York's water? I think that New York water has a better quality than New Jersey. Quality is measured by average pH, nitrate, nitrite, and chloride levels. The tap water of three areas in New Jersey and New York will be collected. The pH will be tested by a pH meter, nitrate, nitrite and chloride levels will be tested by a test strip in a 50 mL of the sample water.

314-02 Kimchi Chemistry

Cindy Lee & Stella Chen

(Ross – Chemistry)

Kimchi is a traditional fermented cabbage dish from Korea. Fermentation is the process of preventing food from spoiling. In the experiment, we are testing the affect of salt on pH. The hypothesis is 'if kimchi is fermented for two weeks, then the pH of the kimchi will decrease'. Different amounts of salt (one, zero, three and five tablespoons) will be mixed with 100 mL of water. The different salt concentrations are then added to the four containers of kimchi. The pH of each container will be checked every day at four o'clock for two weeks (fourteen days). After conducting our experiment for fourteen days, our results showed that the hypothesis was incorrect. The pH did not decrease and the t, Δ tests show that there is no statistical significance between the amounts of salt added to the kimchi. The sources of error are freshness of the cabbage, the temperature the kimchi was stored in and how long the kimchi was fermented.

314-03 Little Lights

Tiffany Lui

(Ross – Products)

This experiment is testing between the different materials candles are made of, their color, and whether the brand or generic matters. Even though candles are rarely used anymore, people still like to buy them for their fragrance or maybe even for a romantic candlelit dinner. Candles can also be used just in case of a blackout. By testing materials, brands, and colors, there have been interesting results. Candles were placed in the same environment for testing everyday where there were no lights. In the end, the t-test for different material candles were 0.04. This means that there is a 95% statistical difference. But unlike colored candles and white candles with a t-test value of 0.74, there have been no statistical difference. This also goes for brand and generic candles with a t-test value of 0.87.

314-04 Battle of the Products Against *E. coli*

Richard Gandolfo

(Aubrey – Products)

Bacteria cells are everywhere; on surfaces, in the air, and even in our own bodies. When we get our hands dirty, wouldn't it be nice to know which product will actually get the job done at disinfecting them? There are dozens and dozens of products that claim to almost completely sterilize our hands from any unwanted microorganisms. This project is testing three popular products: antibacterial lotion, rubbing alcohol, and hand sanitizer. The purpose is to see which of these antibacterial substances are most effective at killing a common bacteria, *E. coli*. The procedure involves containing 0.4 mL of *E. coli* in a Petri dish. It will then be divided into four parts: one to serve as the control, and one to be a dedicated area for each of the 3 products. The zone of inhibition will be measured to determine which product was most effective at preventing the growth of the bacteria. It is hypothesized that the rubbing alcohol will be most effective. We may finally be able to tell if carrying around a small bottle of hand sanitizer is even worth it.

314-05 Ready, Set, DRINK!

Danielle Cano-Garraway & Ramsha Farooq

(Ross – Medicine)

Dehydration is a big concern for athletes and so is the loss of electrolytes and different minerals. This experiment will be testing whether or not the consumption of various drinks before you run will enhance your time. We are trying to see whether drinks have the power to enhance their ability. There were 6 different drinks tested. There were 20 female runner athletes tested, all around the age of 15 to 16. Athletes were told to run 400 meters each day with a different drink and then the time recorded was compared to the control time, which would be their individual time without any drink consumption. If the athletes are to drink half an hour before they are to run then their performance wouldn't be affected. A t-test shows that there is no relationship between the time and the drinks the athletes were given.

314-06 Can Tide GAIN All the Prize?

Dao Quan Lin

(Aubrey – Microbiology)

Are you worrying about if bacteria such as *Serratia marcescens* grow on your clothes? If liquid detergents can kill bacteria, it would save a lot of time for us. Since *S. marcescens* are commonly found in bathroom and we usually stack our dirty clothes in bathroom, it is easy for them to grow on our clothes. In this experiment, I test three brands of popular liquid detergents including Tide, Gain and All. I hypothesize that Tide would be more effective against *S. marcescens* because when I survey the nearby laundries; most of their customers use Tide. Therefore, I think Tide will be more effective. I test the hypothesis by soaking small pieces of filter paper in water, Tide, Gain and All, and place them in the separate section of the agar plate with *S. marcescens*. Then, I incubate the agar plate for 24 hours and measure the zones of inhibition.

314-07 Zoom to the Finish Line

Sandy Wu

(Sullivan – Engineering)

How do airplanes and ships move in the air or in the water? Does different propeller size affect the distance an object would travel? Bernoulli's principle and Newton's third law of motion are used in this experiment to demonstrate how the propellers create force and thrust to produce lift. This experiment measure the time it takes for a box to move a certain distance. The independent variable is the size of the propeller blades. The dependent variable is the speed the box moves from the thrust produced by the propellers. The controlled variables are power of the motor, angle of the blades, size of

the box and the distance the box moves. The propellers are cut out from a piece of zinc sheet and attached to 3 central hubs that are spun by a motor. Each central hub has 4 of the same sized propellers. The wheels, AA batteries, and motor are then attached to the box. Trials are tested using the 3 hubs with different sized propellers. I hypothesized that the smaller the propeller size, the faster the object moves. My experiment results showed that the average time taken by the smallest sized propellers to move one meter was less than the time taken for the largest sized propellers to move. This was because the larger sized propellers were heavier than the smaller sized propellers so the heavier the propellers are, the slower the box moves.

314-08 Yummy! The Fatness in Beef!

Cyndi Tlatelpa

(Ross – Chemistry)

This experiment will help determine which type of beef is unhealthy to consume by calculating the yield percent of fatness of several types of beef that are consumed by Americans. These beefs are Regular Ground Beef, Kobe Beef, Black Angus, Kosher Beef, American Wagyu, Matsusaka Beef, Mishima Beef, Vegan Ground Beef, and Mexican Chorizo Beef are unhealthy to eat by calculating the yield percent of fatness for each beef. Kobe, Matsusaka, and Mishima Beefs come from Japan and according to research Japan beef is known to decrease bad cholesterol. American Wagyu and Black Angus are popular beef cattle and are consumed widely by Americans. Regular ground beef is already known to have a great amount of fat but is another type of beef that surpasses it.

314-09 Carbs make you gain, but will they help relieve pain?

Kayla Gittens & Karina Mitrova

(Ross – Medicine)

We are all familiar with the common over the counter drugs that are often purchased in pharmacies and advertised on television but how fast do they actually get to work and what are their true effects on the body? This project focuses on finding which commonly used tablet against pain dissolves the fastest and in which type of solution. The tablets tested were Motrin, Advil, Tylenol, Aspirin, Excedrin, Aleve, Sinus Relief, and Alka-seltzer. We tested the dissolution rates of the tablets by placing them into solutions of distilled water, sugar water and corn flour water. Our hypothesis was supported because the carbohydrates did not affect the dissolution rate of any of the tablets. Most of the tablets are acidic and contain Acetaminophen while Alka-seltzer is an antacid, which is meant to neutralize the stomach acid. Alka-seltzer showed to be the fastest dissolving tablet.

314-10 Different Hue of Fabrics

Andy Liu

(Sullivan – Products)

In this experiment, I conducted tests on polyester, linen, cotton and nylon to see which had the darkest hue using color dye. I place each fabric separately in four trays with color dye. Then, I would check each tray after a certain amount of time and record the darkness. Nylon had the darkest color while cotton was the lightest at the end of the experiment.

314-11 Liquid Viscosity

Julia Lin

(Sullivan – Physics)

For this experiment, the purpose was to find out a liquid's viscosity, the resistance of flow. You would find the distance of where a marble starts and where it ends and find the amount of time it took for it to reach that distance. For my results, honey took the longest time for it to reach to the bottom of the container, so with an equation, the viscosity of honey was still higher than the other liquids that were tested. This was also

because the density of honey was greater than the other liquids, which mean that it is denser and harder for the liquid to move. The reason for honey to have a high viscosity is because honey is very sweet, which means that there's a lot of sugar, and as the sugar crystallizes in the honey, it makes the liquid thicker causing it to have a higher viscosity.

314-12 Dirty Mouth!

Israt Hossain

(Aubrey – Products)

Many people use mouthwash to get rid of germs and bad odor in the mouth, but do they all work well against getting rid of the bacteria in a person's mouth? The purpose of this experiment was to determine what type of mouthwash: fluoride rinses vs. anti-septic mouthwashes works well on inhibiting the growth of *Staphylococcus epidermidis*. A sterile method was used to conduct this experiment, to prevent the contamination of the agar so the results were not skewed. A sterile paper disk was soaked in the 6 different mouthwashes and control (water) which were then incubated at 37 °C. Finally, the zones of inhibition were measured. The study of this problem can positively affect others because it will help consumers and maybe dentists choose/prescribe a better mouthwash that will kill the bacteria in the mouth best and get rid of bad breath. It will help determine which type of mouthwash is more effective against the bacteria *S. epidermidis*.

314-13 Spicy Bacteria

Vanessa Liang

(Sullivan – Microbiology)

Spices are mostly well known to use as a seasoning for food. Back in the past, people used spices to preserve meat. In my experiment, I wanted to test which spice would work best in killing bacteria. The four spices I used were onion, garlic, cayenne pepper, and cumin. All four of these spices are known to be antibacterial spices. Although the bacteria found on meat wasn't provided, I used the bacteria *E. coli* which is found in the intestines and *S. epidermidis* which is found on the skin. After testing each bacteria, the spices were most effective on *S. epidermidis*. This led me to other reasons as to why spices would be used for health benefits.

314-14 Which Soda Is Worse for Your Teeth?

Demitria De Riggs

(Ross – Medicine)

The purpose of my experiment was to see which soda is worse for your teeth based on acidity and limestone measurements. I believed Pepsi was the worse because it had the most acid but in reality, Dr. Pepper was the worst. Dr. Pepper had less acid than Pepsi but its limestone measurements were higher. I tested eight sodas and did three trials of each soda. I recorded the pH of each soda, recorded the limestone measurements of each, and stained a white egg with each of the sodas. The best soda was Sprite because it had the best results. The pH didn't really have an immense impact on the results.

314-15 Ready, Set, Melt!

Alexander Anastasiadi & Raja Nafeel Khan

(Ross – Products)

The purpose of this experiment is to find out which substance melts ice the fastest by collecting the amount of ice melted within a 15 minutes interval. The background of this experiment is black ice which is found of roads. Engineers and scientists are trying to find a way to remove black ice from the roads. Rock salt was hypothesized that would melt ice the fastest because it is commonly used by family households and the Department of Transportation (DOT). From this experiment, it is concluded that iodized salt is the best substance to use to mix in with the asphalt (the roads) to melt the ice.

314-16 The Effect of Salt on the Freezing Point of Water

Nina Zhang

(Sullivan – Chemistry)

314-17 Oily Iodine

Judy Li

(Ross – Products)

There were five trials to test which oil was the healthiest; vegetable, canola, olive and sesame oil. The control was water and the variables were the different types of oils. The oils and water were heated to about 65 °C and drops of 4.1% tincture of iodine were added until the oil changed color. The data were recorded and there were 11 t-tests to find the statistical significance of oil compared to another type of oil and the control. The sesame oil turned out to have the highest average, which meant that it had the most double bonds making it have the most amount of unsaturated fat.

314-18 Could switching to hand sanitizer really kill 99.9% of bacteria?

Earvin Chen & Mehmet Ozturk

(Sullivan – Microbiology)

The experiment performed was to test whether hand sanitizer is truly effective at killing bacteria/germs. Using Petri dishes growing *E. coli* and *S. epidermis*, we placed filter disks that were submerged in various brands of hand sanitizers into the Petri dishes. By measuring the zone of inhibition, we were able to determine which brand of hand sanitizer worked the best. We hypothesized that Purell would be most effective on both bacteria. The experiment showed that most of the hand sanitizer are about the same in efficiency. However, Purell was shown to be the most effective, giving the greatest zone of inhibition on average.

314-19 Inhibition of Tiny Wildlife

Ryan Fraser

(Ross – Microbiology)

For this experiment, samples of the bacterium *Escherichia coli* and the bacterium *Staphylococcus epidermis* were acquired. Using twelve Petri dishes in total, *E. coli* was applied to six of the plates, and *Staphylococcus epidermis* to the other six. The four products used for testing were Neosporin, Neutrogena, Nizoral, and Duac. Using filter disks, products were placed into the bacteria. Each Petri dish contained two of the products with the addition of a control - distilled water. The bacteria were incubated at 37 degrees Celsius, and I recorded the measures of the zones of inhibition and calculated the averages for each product for each bacteria. T tests were performed to determine if there were statistical differences. In the end, according to the data, it was concluded that Nizoral was the most effective against *Escherichia coli*, and Neutrogena was the most effective against *Staphylococcus epidermis*.

314-20 How “green” are your clothes?

Jennifer Yau

(Aubrey – Environment)

Every day, eco-friendly products are sold because they claim to have a less harmful effect on the environment. To find out more, I tested the effect of these “green” products versus the effect of conventional products on the environment. I chose to test this because if it’s true that green products have a better effect, people would start to buy them in order to achieve a less polluted environment. The eco-friendly laundry detergents claim to be biodegradable are therefore less toxic. I hypothesized that the “green” detergents will cause the death of fewer worms than the conventional detergents. For the procedure, I mix varying concentrations of detergent and mix them

into soil. Altogether I have to have twenty cups of five varying concentrations for four different brands of detergent - two "green" brands and two conventional brands. After putting the worms in the cups with soil, I wait five days and check to see how many worms are dead or alive.

314-21 Something Smells Fishy

Svetlana Pushkar

(Aubrey – Environment)

My experiment is important because if the hardness of either freshwater or seawater is not proper then the species inside may be affected. For this project I have to travel to different lakes and beaches to collect six water samples. After I have collected the water samples, I will then use the kit that I have ordered online to test for Magnesium and Calcium in water. This experiment will test the similarities and differences of seawater and freshwater hardness and how this may affect the fish if the level of Magnesium and Calcium is not proper. My hypothesis is that if seawater is said to have more minerals inside, then the hardness concentration should be high as well. The results in this experiment will issue the different concentration should be high as well. The results in this experiment will issue the different concentrations of hardness stated in the form of dH degrees.

316-01 Citrus fruit

Isabela Bertani

(Sullivan – Chemistry)

This experiment tests the pH of different citrus fruits over time. Citrus fruits are naturally acidic containing ascorbic acid, there is reason to believe that perhaps the acidity levels change (based off of a change in taste). Acids taste sour and bases taste bitter and the taste of a grapefruit is different over time so I attributed it to a change in pH levels. I hypothesized that different types of citrus fruit's pH levels would change over time and get closer and closer to a neutral pH. The results of my experiment are inconclusive due too a lack of data.

316-02 Add Some Beats to Those Moves

Anna Chen

(Ross – Behavior)

The experiment was done to determine whether or not listening to music and listening to different types of music while doing pushups will have any effect on the athletic performance. In the experiment, the twenty participants will each being doing five tests. One test is doing pushups without listening to music and the other four tests are doing pushups while listening to music. The four types of music being tested on are Pop, Rap, Classic, and Rock music. According to the results and data, listening to music while doing athletic activities does have an effect on the performance level; it increases the performance level. However, there weren't differences between the results between the different music with the exception of Classical music compared to pop music and classical music compared to Rock music, both being that the performance level is lower while listening to classical music.

316-03 The Rate of Enzyme Activity

Leo Liao

(Ross – Plants)

This experiment will be a little messy playing with liver smoothie. If you like the mess, come and enjoy this experiment with me! The purpose of this experiment is to investigate how does the rate of enzyme activity react with hydrogen peroxide under different conditions. These conditions include heating both the extracted enzyme solution of four different substances and the hydrogen peroxide, along with adding salt, optional, to all four substances and the hydrogen peroxide. When bubbles are being

form in a solution, we know there is a chemical reaction happening. Chemical reactions can either occur spontaneously or non-spontaneously. When I mean spontaneously, I mean a reaction just happens by itself! On the other hand, when a reaction is non-spontaneously, it requires extra energy for the reaction to start. When a reaction reacts, it releases energy and forms product. This reaction can happen really fast! In this experiment when the extracted enzyme solution reacts with hydrogen peroxide, it forms hydrogen gas. Based on my data, under normal condition, the average rate of enzyme activity for potatoes in seconds is 15.3165, pork liver is 1.043, ginger is 11.992, and cow liver is 1.388. Under normal condition, both livers appeared to be extremely faster than ginger and potatoes. Based on the t test results, all of the data that was collected are 99.9% significant.

316-04 Slimy Likes It!

Anna Guo & Evelyn Veliz

(Ross – Microbiology)

Many organisms have different ways of sensing and responding to chemical signals; these signals can indicate the presence of food or a harmful chemical. In this experiment, the effects of different concentrations of glucose on the chemotactic responses of *Physarum polycephalum* bacteria were observed. To test the glucose concentration effects on *Physarum polycephalum*, its slime mold was cultured and then transferred into different Petri dishes each containing glucose solutions of 100 mM, 10 mM, 1.0 mM, 0.1 mM and distilled water on filter paper. The growth and movement of the plasmodium was observed for a period of three days for each of the three trials performed to determine its chemotactic responses to different amounts of glucose concentrations.

316-05 Shield Yourself from Ultraviolet Rays

Emily Yip

(Aubrey – Products)

Many people pay high prices for a pair of sunglasses that might make them look good. Sunglasses benefit people in two ways: it helps them look good and protects them from UV rays. Many of these sunglasses also claim that they have 100% protection from UV rays. In this experiment, some of the top brands of sunglasses are tested to observe which pair is most effective in prevention against UV rays. If eyes are not properly protected against UV rays, they can be damaged. This experiment informs consumers about the best pair of sunglasses in the experiment that can help block their eyes from UV rays. If the beads do not change color, then RayBan sunglasses are the most effective in prevention against UV rays. Beads that change color under the presence of UV rays are placed behind each sunglasses and their color changes are observed.

316-06 Sugary Oranges

Fabliha Hoque

(Sullivan – Biochemistry)

Every day after lunch I always eat a Tangerine or a Clementine but I have always wondered which is sweeter? This experiment looks at the amount of sugar in citrus fruit with an orange skin color. I took the liquid from eight fruits; four of the fruits were oranges while the other four were not. After filtering the liquid, using a hydrometer I measured the specific gravity later converting it to sugar concentration. My hypothesis was the Clementine would have the most amount of sugar and the Minneola would have the least. The experiment results did not support my hypothesis by showing that the Tangerine had the most amount of sugar and the Cara Cara and Moro orange had the least, excluding the grapefruit.

316-07 Eggciting Eggsperiment

Sarah Khoja

(Aubrey – Products)

Everybody wants that superstar stunning smile, with blindingly white teeth, right? But how do we achieve that whiteness? Which brand of toothpaste whitens and protects at the same time? When I started this project, my endeavor was to answer those questions. To the problem, which brand of toothpaste has a greater effect on strengthening and whitening teeth, Aim or Pepsodent, I hypothesized that Aim would have a greater effect. During this experiment, I used two dozen eggs, separating them into 2 groups, one for whitening and one for strengthening. The first group was soaked with vinegar overnight, and the second was left in coffee. Starting the next day, all eggs were brushed with specific toothpaste, three times a day for one week. In the end, my hypothesis was supported by the data collected, Aim had proven to be a better toothpaste in the whitening and strengthening categories.

316-08 Truth to the Labels

Ramin Ikhiilov

(Sullivan – Medicine)

Most people don't know how sugar concentration is measured in drinks or liquids. People can obviously check the ingredients label, but this cannot be 100% correct at times. How do scientists measure sugar in drinks or in this case soda? Well, they use this scientific instrument called a hydrometer. The hydrometer is placed in a solution of the liquid being tested and it will float within the liquid, measuring specific gravity. (May vary with different hydrometers) Usually the higher the hydrometer floats the higher the sugar concentration or the more sugar there is. In this science fair project four different sodas were used: Fanta, Coca-Cola, Dr. Pepper, and sprite. These sodas were chosen particularly because I enjoyed their flavors. These drinks were measured with the hydrometer and then specific gravity was changed to Brix which was then changed to sugar concentration. Through the results, the brand name Fanta had the highest sugar concentration. This means that Fanta had the most amount of sugar contained within the drink. Most people believe what they read, when talking about food labels. But in some cases, food labels may contain invalid data. This science fair shows one way you can check certain information about the drinks or liquids that are being consumed by many people.

316-09 Music to my ears

Nicholas Lee

(Sullivan – Behavior)

The purpose of this experiment is to determine whether or not music improves one's concentration or work efficiency and also if different music genres have different effects on one's concentration. I hypothesized that classical music would greatest improve in someone's work efficiency. Five types of music and the control were tested. For each genre of music tested, each subject was timed to complete six different mazes of the same difficulty while listening to that type of music. The control was with no music. Statistical analysis was done on the data taken and it was found that the type of music had no significant difference to one another. The control having come out with the best results was the only one where some significant difference was found when compared with the other types of music tested.

316-10 Cool It Down!

Linda Ngo

(Sullivan – Chemistry)

Have you ever wondered how an instant cold pack works? Instant cold packs contain two components, water and ammonium nitrate. Once the two components mixed together, it performs a reaction known as endothermic reaction. An endothermic

reaction is a chemical process that absorbs energy in the form of heat, which causes the temperature to decrease. In agriculture, ammonium nitrate is commonly used as a high-nitrogen fertilizer. It is used in cold packs to reduce pain or swelling and is the main component of ANFO explosives. In this experiment, we will determine how different amounts of ammonium nitrate dissolved in 100 mL of distilled water can affect the temperature. Ammonium nitrate, ranged from 10 g–50 g is mixed with 100 mL of distilled water. The temperature is recorded every 15 seconds, including the initial temperature of the distilled water. After sets two trials, we can see that as the amount of ammonium nitrate increases, the temperature decreases, and the reaction rate increases. The heat energy equation was applied in order to calculate how much heat energy was lost.

316-11 Bacteria Makes Millions of Friends

Irina Nehai & Kelly Shi

(Ross – Microbiology)

Bacteria, although can benefit us sometimes, most of the time is harmful to humans; the fact that it can be found on almost all surfaces that we come in contact with daily increases our risks of becoming sick. In this experiment, we sought out to determine which floor in the annex of our school has the greatest amount of bacteria on its doorknobs. To do so, we used sterile swabs to swab doorknobs and transferred the bacteria unto agar Petri dishes, which were incubated overnight so that bacteria growth would be significant enough to see and measure. In the end, we determined that the first floor was the one with the most bacteria, its average being 2.65 on our specially designed scale of measuring the bacteria, whereas the second floor had 2.30 and the third a mere 1.20. The implications of these results are that the doorknobs hundreds of students touch each day are not sanitary and may, in fact, cause them to be sick if the bacteria get the chance to be transferred into their bodies. This should raise awareness of the bacteria on the doorknobs and hopefully increase the usage of hand sanitizer and soap.

316-12 Bacteria Beware

En Nekema Noel

(Ross – Products)

Serratia marcescens is a rod shape, gram negative bacteria with an incubation temperature of 37 °C. This bacterium inhabits areas that are in moist conditions. *S. marcescens* is also a human pathogen as well. One of the places in which this bacterium inhabits is in human beings mouths. This bacterium can cause oral infections. An experiment was set up to test the different effects that mouthwash would have on *S. marcescens*. The five mouthwashes being tested were Crest, Listerine, Close Up, Aim, and Mouthwash. By doing this experiment, you can see which mouthwash will be able to work against *S. marcescens* the best. In order to do this, there will be an experiment of the bacteria in the agar plate, and disks that have been dipped in the mouthwashes that will be used. These disks will be put into the agar plate and left to incubate at 37 °C for 24 hours. Then the zone of inhibition will be measured in mm. Then after 3 trails of the five mouthwashes against *S. marcescens* for 10 days, a t-test will be conducted, that will compare all of the mouthwashes zones of inhibitions with one another in order to see which mouthwash had the greatest effect on the bacterium *S. marcescens*.

316-13 What vitamin helps you see? VITAMIN C!

Samantha Cham & Xiao Wen Ren

(Ross – Chemistry)

This experiment was to see which brand name orange beverage has the most abundance in vitamin C and if vitamin C varies over time. A laboratory method of titration is used to find the concentration of vitamin C in each beverage. The titrant, or solution with known concentration, consists of 20 mg of vitamin C in 20 mL of water. The amount of iodine used to react and break down the vitamin C in to starch will be

used in calculating amount of vitamin C in other juices. The brand names are: Tropicana, Florida's Natural, Crush Orange Soda, Sunny D Tangy Original, Glaceau's Vitamin Water Essential Orange, and Apple and Eve Orange Juice. To find the change in vitamin C over time, oranges are gathered all at once and some are tested on one day. Seven days later, the rest will be tested. Tropicana and Vitamin water were expected to have the highest compared to the rest and vitamin C decrease over time. To calculate amount of vitamin C in the solution, proportions are set up and solved for unknown concentration. Tropicana and Florida's Natural had the highest concentration out of all the brand names tested. The orange juice tested on the first day had significantly higher vitamin C level than the orange juice tested seven days later. The t-test value between Day 1 and Day 7 was 4.0582. The average of Vitamin C concentration is 26.46 mg, while the average for Day 7 is 16.8 mg. This shows vitamin C decreases over time.

316-14 Mr. Beethoven, help me remember!

Madina Khidoyatova

(Sullivan – Behavior)

Short term memory is the information needed to remember for only a short period of time. There are many factors which can affect a person's short term memory. One of them is music. The purpose of this experiment is to see if listening to classical music has any affect on the short term memory of adolescence. Classical music lowers the heartbeat and breathing rate, therefore keeping the body relaxed and alert, making the mind more able to concentrate. This experiment placed 60 Midwood high school sophomore students into two different groups, each containing equal numbers of males and females. The first group, the control, completed a particular memory game online without listening to music. The second group, the experimental group, listened to Beethoven's Winter Sonata with SONY head phones on for exactly 3 minutes, then immediately completed the memory game. The number of seconds it took each group to complete the memory game was averaged to be 34 seconds for the control group and 32 seconds for the experimental group. When the t-testing was performed, there was a 95% confidence that there is a significant difference between the two groups. The results indicated that classical music increases the short term memory of adolescence. One of the factors that could have affected the results was that there might have been a little background noise while playing the game, which might have distracted the participant. Because of the results of this experiment, I wonder if other types of music such as rock, and hip hop have an effect on the short term memory.

316-15 Be Wise and Sanitize

Matthew Chan

(Aubrey – Cellular)

Recently, scientists discovered that hand sanitizers do not last a long time. They only work for about 2 minutes. Since hand sanitizers don't last too long, it would be important to at least know which brand of hand sanitizer would kill the most bacteria. In order to find out which hand sanitizer brand is the most effective at killing *Staphylococcus epidermis*, which can be found on human skin, we had to grow it in a culture plate. In each culture plate, we added 0.4 mL of the bacteria. We did this with caution so that no outside bacteria would interfere with the experiment. Then we soaked paper disks, of the same size, into different brands of hand sanitizer. We placed these paper disks into the culture plates, and incubated them overnight. The next day, we would be able to measure the zone of inhibition, which is the area where no bacteria were able to grow. The larger the zone of inhibition, the more effective the hand sanitizer is. In this experiment, we hypothesized that the better known hand sanitizer brand, Purell, would be the most effective at killing *Staphylococcus epidermis*.

316-16 Can Coke Vanish Meat?

Denise Roa Pena

(Ross – Chemistry)

This experiment was conducted to see if Coca-Cola is able to dissolve meat. This was done by submerging different types of meat in Coca-Cola, orange juice, and water. Every day the weight is measured by using forceps and a scale. After calculations, it is acknowledged that the weight of the meat didn't not progressively decrease but instead increase. Carbonated drinks such as Coca-Cola are said to dissolve tooth enamel, chalk, and limestone. As the acid in our stomach dissolve or break down meat, the acids do not work alone they have the help of enzymes and microbes to help break down the meat. And even though Coca-Cola contains phosphoric acid it does not have a pH low enough to dissolve meat, compared to the low pH of stomach acid.

316-17 Alcohol in Bacteria

Mandy Huang

(Sullivan – Products)

Staphylococcus epidermis and *Escherichia coli* are both bacteria that are found in the human body. Rubbing alcohol is used for cleaning household and in medical situations. Methanol is used for varnishes and lacquers in solvent form. Methanol is more effective than rubbing alcohol against both of the bacteria.

316-18 Out for The Kill!

Artan Ljukovic & Mikhail Khoshayev

(Ross – Microbiology)

Bacteria are everywhere. Helpful ones and harmful ones all survive and thrive around us. We try to keep safe from infections and diseases. What do we turn to? Soaps and hand sanitizers. With so many choices, which ones do we choose? Do we choose the cheap, store brand or the pricey name brand? Purell, Soft Soap, Dial and Clear Effects are the obvious top selling brands. They are not the best to do the job though. The test we will be performing is to find out which of the antibacterial soaps and hand sanitizers are most effective on killing bacteria. *S. Epidermidis* and *E. coli* are two of the very popular bacteria found on our body. We will be using two store brand soaps and two brand name soaps. Along with the soaps, we will be using two store brand hand sanitizers and two brand name hand sanitizers. Our hypothesis was not supported. The Purell was one of the worst working products. The soaps generally worked better. The best working product was the Up & Up soap. Another thing to point out was that the Up & Up hand sanitizer was the best working hand sanitizer.

316-19 Is Permanent Forever?

Sara Saad

(Ross – Products)

In this experiment I was testing how permanent are permanent markers. I tested certain solvents to see if they would be able to remove the ink and I tested different brands of permanent markers to see if the results would be the same? To test how permanent are permanent markers I used two brands of permanent markers which were Sharpie and Bic. I took strips of white T-shirt, drew on them small dots and placed them in the solvents I used in this experiment. After 5 minutes I took the strips out. Then I let them dry and placed them in the washing machine to wash them and see which solvent would work best to remove the permanent marker ink off the T-shirt. The nail polish remover was the most effective on the strips with the Sharpie ink on them and water was the least effective. For the strips with the Bic ink on them none of the solvents had an effect on them.

316-20 Will hearing or reading help you memorize better and faster?

Jenny Ng

(Ross – Behavior)

The experiment was done to determine if hearing or reading helps people memorize better. In the experiment, 20 test subjects were collected to be tested. Each test subject was given a piece of writing, which has 16 words, to read and memorize for one minute. Then they needed to say it back while he/she was being timed. Also, the number of words they remembered was recorded. The same test subject will listen to a piece of writing that has 15 words. This was repeated again for a second trial. This whole process was repeated to 19 other subjects. A t-test was done to see if there is a significant difference between reading and hearing. The results show that there is no significant difference between reading and hearing but from the data reading helps you memorize better while hearing helps you memorize faster.

316-21 Debbie Meyer's Green Bags... Do They Really Work?

Orit Sharf

(Aubrey – Products)

Have you ever seen the Debbie Meyer green bag commercial? Debbie Meyer created them to help fruits and vegetables last longer than they would in traditional storage to save people money. Many claims on television aren't true. Maybe people who are trying to save money by buying the bags are actually losing even more money. I decided to test it to see if it really does work because I was skeptical. I chose a couple of different fruits and vegetables that easily spoil and rot. I placed three of each type in the green bags and in regular grocery bags. I monitored them daily and compared their progression.

318-01 What is texting doing to you?

Diana Koval

(Aubrey – Products)

Hand dexterity demonstrates the skill and quickness of fine motor skills. These skills are necessary in many aspects of daily living including writing and feeding. This experiment tested whether texting affected fine motor skills, as it deals with some of the same muscle groups. Texting is popular and relevant in our society and it is important to know how it may be influencing us. I hypothesized that faster texters will perform better on fine motor skills tests. This was tested through a partial Jebsen Test of Hand function which included stacking wooden checkers, stacking cards, and placing small objects in a cup. These tests were timed as the subjects performed them and correlated to their performance in texting.

318-02 Let's talk about acne!

Ashley Charles & Nyah Smith

(Sullivan – Products)

We conducted an experiment to test the effectiveness of acne medications on *S. epidermidis* and *E. coli*, since *P. acne* wasn't available to us. *P. acne* is the main bacteria that cause acne and blemishes. We hypothesized that one of the Neutrogena products will work the best. Due to the fact that Neutrogena products have the highest amount of salicylic acid compared to the other products. But, based on our data Noxzema was the most effective acne cleanser.

318-03 CSI: Midwood

Justin White

(Sullivan – Physics)

Since the first time I watched the show "CSI", I decided I want to become a crime scene investigator when I grow up. And this project was perfect. This project tests the use of

blood spatter analysis techniques used by crime scene investigators today. I had to create fake blood and create my own fake crime scene, which was very interesting. In the end I was able to conclude that Crime scene investigators methods are great, and really reliable.

318-04 Defenseless Bacteria

Onycha Banton & Asia Wynn

(Sullivan – Microbiology)

The results obtained from the experiment caused the experimenters to come to certain conclusions. The bathroom cleaning product that had the highest average zone of inhibition for *S. marcescens* was Comet. Comet's average zone of inhibition was 22 mm. The cleaning product that had the lowest average zone of inhibition was Scrubbing Bubbles. Its average zone of inhibition was 8 mm. Scrubbing Bubbles; however had the highest average for *B. megaterium*. According to the results received, its average was 21 mm. Lysol had the lowest average for these bacteria. Its average zone of inhibition was 11.6 mm.

318-05 Don't Let the Pollutants Keep You Down

Imani Whaley

(Aubrey – Plants)

Plants are an essential source of oxygen for us. Without them we cannot stay alive. But are we doing our part to conserve our energy source? People do not realize that the products we use on a daily basis such as: hair spray, body spray, automobiles and cleaning products, are the things that are killing off our oxygen supply. Some are more harmful than others, and may have a much greater effect on the growth of plants. This experiment was conducted to test which type of pollutant, hair spray, Windex, or an artificial liquid waste, has the greatest negative effect on the growth of silver dust plants. Eight plants were tested in this experiment and were watered and measured (in cm) daily. Two plants were the control, two were sprayed with hair spray, two were sprayed with Windex and two were sprayed with an artificial liquid waste. The hypothesis was that the Windex would have the greatest negative impact on the growth of silver dust plants.

318-06 More Volts, More Light

Vlad Moraru

(Sullivan – Physics)

Today, most of electrical components contain light emitting diodes, LEDs. LEDs come in many sizes and shapes and can be found in multiple devices from remote controls to traffic lights. LEDs or light emitting diodes have sensitive electronic components that emit light when electricity flows thru them. How does the flow of electricity affect the brightness of the LEDs? To find out, a battery was used to increase the voltage in the LED and a light sensor was used to determine the maximum amount of lumens that the LED would reach with voltage gain. Some of the LEDs passed the 375 lumens mark and increased up to 500 lumens. The LEDs stood at the top mark for a certain amount of seconds and then they burned out when the LEDs would reach maximum voltage capacity.

318-07 Age Away!

Maggie Cai

(Aubrey – Animals)

Many women spend a lot of time and money on their physical appearance and covering up the flaws they may have from aging and patients with cancer suffer through many types of painful treatments, but maybe something as simple as hydrogen peroxide could help. Hydrogen peroxide is an oxygen free radical and in this experiment, is going to be tested to see what effect it has on aging. An oxygen free radical like

hydrogen peroxide, according to previous research, is supposed to slow down the aging process. If oxygen's free radical role has an effect on ageing, then the *Drosophila melanogaster* used in this experiment will age slower. *Drosophila* will be placed in separate vials with different concentrations of hydrogen peroxide, which will be mixed with *Drosophila* media. Each will be observed to see if the rate of development slows down and if they reproduce less than the control. Aging is due to oxidative stress and damage due to exposure to the elements in the environment. Hydrogen peroxide decreases the damage done by oxygen free radicals and may be useful in the treatment of cancer because the increase in oxygen of the cancer cells will cause the cells to die and spread slowly.

318-08 It's Time to Sprout, Little Beans!

Shireen Chan

(Aubrey – Plants)

What exactly is germination? Germination is the process by which new seeds or beans begin growing given the right conditions. In order for the germination process to undergo successfully, certain conditions are needed. Germination needs constant temperature, a constant amount of light, oxygen, and water. In my experiment, I decided to use seltzer water to germinate beans in place of water as the variable. I decided to use seltzer water because I wanted to test the effectiveness of the germination if there were more carbon in the water. My hypothesis was that the effectiveness of germination would decrease if I used seltzer water in place of water. In this experiment, the length of the spore growth was measured for each bean in every Petri dish for both the control and experiment groups.

318-09 The Effect of Cleaning Products on *E. coli*

Jessica Xu & Veronica Ceselka

(Ross – Products)

In this experiment 12 cleaning products are being tested against *E. coli*. The twelve products are Fabuloso, Clorox, Lysol Toilet Bowl Cleaner, Lysol Bathroom Cleaner, Lysol Disinfect Spray, Lysol All Purpose, Windex, 409 All Purpose Cleaner, Tilex Mold & Mildew, Allergen, Rite Aid All Purpose Cleaner, Tilex Fresh Shower and distilled water is the control. This experiment was tested four times for each cleaning product, which took a total of 11 days. Which cleaning product will have the greatest zone of inhibition when placed on a Petri dish with *E. coli*? Zones of inhibition ranged from 7.30 to 31.00 mm. The zone of inhibition that had 31.00 mm was the Lysol Toilet cleaner and the smallest zone was the Rite Aid All Purpose cleaner, not including the control which was water that had a 6 mm average. The Petri dishes were incubated for about 1–2 days and taken out for results.

318-10 Make it Grow

Yong Wu

(Sullivan – Plants)

I grew lima beans in Petri dishes with the use of different pH levels. On the first day I had to water them with the five different pH levels that I have received which is 5, 6, 7, 8 and 9. I had to take the measurements of the plants on this day too. Over the course of the next eight days I have been watering the beans with the appropriate pH levels with the same amount to each dish as well as getting rid of the mold infected beans as quick as possible. On the last day in my experiment I had to take the final measurements of the beans. In the end it seems that the lima beans in Petri dish 9 had the best results.

318-11 Eyes on the Side of Your Head

Zoe Ma

(Ross – Behavior)

For my experiment, I tested if darker eyes or lighter eyes have a better peripheral vision by testing twelve people with dark eyes and twelve people with light eyes. I tested their peripheral vision by moving a colored shape from the person's left to right. I placed a protractor in front of them and record the degree in which they identified the shape and its color. I tested each person three times then calculated the average degree. After gathering all the needed data, I compared the results. After comparing the results, I concluded that people with dark eyes have a better peripheral vision than people with light eyes. The average degree for people with dark eyes is 48.1225 and the average for light eyes is 53.6225. When tea testing was done, it resulted in a 90-95% confidence.

318-12 Which is more effective: hand sanitizer or hand soap?

Angela Zhang

(Ross – Products)

The purpose of this experiment was to find out if antibacterial soap or the antibacterial hand sanitizer has the greater effect in eliminating the common human bacteria found on skin. Bacteria are single cells and reproduce by the process of binary fission, where it splits in two. The two main types of bacteria focused on are *S. epidermis* and *E. coli*. *S. epidermidis* is a gram positive bacterium and its' shape is cocci. *S. epidermidis* has the ability to reach to the bloodstream and can cause wound infections, pneumonia, endocarditis and abscesses. *E. coli* is gram negative and the shape is bacilli. The severity of this bacterium depends on the strains that it produces. These two bacteria, *Staphylococcus epidermidis* and *Escherichia coli* can cause serious threats and taking steps to prevent infection is necessary. To lessen the threat of infection from these bacteria is through washing your hands. By using antibacterial substances; their function causes the cease of growth of bacteria. The method of this experiment is to compare the zones of inhibitions measured of hand soap and hand sanitizer. The averages of both bacteria, *Staphylococcus epidermidis* and *Escherichia coli*, along with their results for hand soap was 5.15 mm while for hand sanitizer it was 1.24 mm. The results are that the averages of zone of inhibition for hand soap are greater than compared to hand sanitizer. Therefore, hand soap is effective in eliminating bacteria than hand sanitizer.

318-13 Laser Block

Ganatheipan Raventhirarajah

(Ross – Physics)

The project was conducted to see if the intensity of the laser pointer will reduced or increased depending on the color filter that is being used. The laser may not even change because the laser is a single colored (monochromatic) light. So after all the materials are set up the laser pointer was aimed at a solar cell and hit in the middle of the solar cell. Since the solar cell is connected to a multi-meter it will read the intensity in volts of the laser itself. So if there is a color filter added there is chance that the filter will most likely spread the light and decrease the intensity in volts of the laser beam.

318-14 A clean smile is the best smile

Sakir Hossain

(Aubrey – Products)

Don't you want a cleaner mouth? Well my project tests Colgate, Pepsodent, and Aim toothpaste for which one kills more bacteria. My hypothesis is Colgate will kill the most bacteria since it's popularity is high. How I perform this experiment is by applying each toothpaste to little filter discs. Divide and label the bottom of the dish into 4. Then after applying 0.4 mL bacteria, spread it on the agar gel in the Petri dish for even growth. Place 4 of the discs corresponding to it's label. Incubate the Petri dish upside down. The purpose of this experiment is to see which toothpaste kills more bacteria. So the next

time I go to the store I can buy the toothpaste that would help clean my mouth the most.

318-15 Squiggly Clean Face!

Ying Lin

(Ross – Microbiology)

Everyday we see different kinds of facial wash in the pharmacy but which one is most effective in killing our facial bacteria. The purpose of this experiment is to test which brand of facial wash is most effective in killing bacteria. I used 4 different brands of facial wash: Olay, Neutrogena, St. Ives, and Clearasil to test against 2 bacteria, which are *S. epidermidis* and *E. coli*. The experiment was conducted on agar plates. The facial wash that caused the largest zone of inhibition, area in which bacteria are prevented from growing, is the most effective against bacteria. Three trials was done for each bacteria/product, the results shows Neutrogena is most effective against *S. epidermidis* with an average zone of inhibition 31.67 mm while Olay is most effective against *E. coli* with average zone of inhibition 16.67 mm. then, a t test was performed to know whether or not the data is due to random chance or not.

318-16 Flash Those Pearly Whites

Zainab Saleem

(Ross – Products)

In my experiment I wanted to test which basic whitening toothpaste brand worked the best. I tested Colgate Total Whitening, I was unable to use actual human teeth to test on so I used eggs. I submerged four eggs in tea and let them soak overnight. After 24 hours, I took them out and brushed each with a different brand of toothpaste. I used a new toothbrush over every toothpaste brand to prevent the mixing of toothpastes. I then rated the eggs on a scale of 1–10, 1 being the whitest and 10 being the darkest. I repeated the process for coffee. For the Coca-Cola test, I soaked four eggs at room temperature in a bowl and repeated the process of brushing each egg. The data I collected supported the results that most effective out of the four toothpastes. It received the marks closest to whiteness for all three tests. In second place came Aquafresh White and Shine, followed by Colgate Total Whitening and in last place Pepsodent Complete Care Whitening toothpaste.

318-17 Which Electrolytes Are Electronic

Zachary Gitman

(Sullivan – Products)

The experiment done tested how electrolytes work in different energy drinks. There were four things that were being tested. The first thing tested was to figure out which water subject has the best electrolyte count. The second thing tested was to see how high the electrolyte count for certain energy drinks was. The third was whether energy drinks or water was better for you. The final thing being tested was whether or not sugar affected electrolyte count. Tests were done using the conductivity probe to determine the conductivity of the drinks. Testing the conductivity gave the electrolyte count. The higher the number of micro Siemens the conductivity probe found the higher the electrolyte count. Results showed that all energy drinks tested had similar electrolyte counts. Depending on activity being done water and energy drinks have different uses. Water should be used when doing light work activities and energy drinks when doing an intense activity where the person has lost a lot of electrolytes. All the waters had different electrolyte counts but New York tap water had the highest count. Sugar does not affect electrolyte count. This experiment was done to test claims of which energy drink is the best. Turns out the are all practically the same.

318-18 Color the ice away!

Alex Kurtov & Or Mossaiov

(Ross – Products)

In our experiment not only do we test different colors but we also test different quantities of colors, placing a drop of food coloring in one container, 2 drops in a second and 3 drops in the third container. We filled 3 containers that weighed 46 grams with 100 mL of water. We would freeze the water and take one container at a time. The first would get 1 drop of food coloring, the second 2 drops and the third 3 drops. Then each container would be put under the lamp, separately for 5 minutes and would be weighed. The containers are weighed before the testing and after so that the weight of water that melted can be determined. We tested blue, red, yellow, green, pretty purple, orange sunset, teal, mint green, dusty rose and water. Finally we tested 3 containers without any food coloring, which was our control. Each test we would repeat 2 more times for a total of 3 trials. Our conclusion shows that the hypothesis was true and that the darker colors in this case blue, red and green, increased the melting rate the most and the lighter colors the least. This conclusion was determined by the data table which shows the difference in the averages of ice melted of darker and lighter colors and the t-testing which shows that the dark and light colors aren't statistically the same.

318-19 Mold says, "I Like it Wet!"

Yao Jiang

(Ross – Biochemistry)

In this experiment we want to compare the amount of water (dampness of the bread) with mold growth within 5 days. My hypothesis is that as the dampness increases so will the mold growth. Mold is a type of fungus that decomposes living organisms. They grow anywhere as long as there is oxygen and food. They often appear within homes and some types of mold are harmful to our body. For my experiment you will need 15 slices of bakery bread, a scaled cup, water, 15 Ziploc bags, 15 Q-tips, and 15 Post-it Notes. You will need to spread dust on all 15 slices of bread, and give them different amounts of water (0.0 mL, 2.5 mL, 5.0 mL, 7.5 mL, 10.0 mL), leave them for 5 days, and record your results. My results supported my hypothesis, as the dampness increases, so does the mold growth. My t-test resulted in numbers around 0.5 so my significance value is around 95%.

318-20 Bitter Science!

Prianka Zaman

(Aubrey – Medicine)

Have you ever eaten something bitter, like grapefruit, and hated the taste yet one of your friends doesn't mind the taste at all? You may think the difference in taste preference is due to what types of food you're exposed to while growing up. Did you know that the ability to taste bitterness in most foods is a hereditary trait? Phenylthiocarbamide, PTC, is similar to a toxic substance found in some poisonous plants. The ability to taste PTC is based on a dominant trait. 75% of people can taste PTC while 25% cannot. Those who can taste PTC (tasters) are more likely to taste other bitter toxins found in various food sources. This experiment is being conducted to determine whether the ability to taste PTC affects how much bitter food is in your diet. This will be tested by having test subjects taste strips of paper treated with PTC, sodium benzoate and thiourea. I believe that non-tasters will have more bitter food in their diet due to the disability to taste most bitter toxins compared to tasters.

318-21 Wash your dishes, clean your planet

Rui Chang Mei & Rabije Cekovic

(Aubrey – Earth)

What have you done to protect Mother Nature? Recently, many companies have been producing products that claim to have less of a negative impact on our environment.

They are claimed to be safer and more eco-friendly. Do these products live up to their claims? That's what we wanted to find out. We decided to test 'green' liquid dishwashing detergents and conventional dishwashing detergents to see if the 'green' detergents really are less toxic. Based on our previous research, our hypothesis was, if earthworms encounter both 'green' and conventional detergents, then they have a better chance of surviving in 'green' detergents because 'green' detergents are less toxic. To perform this experiment, we prepared various concentrations of each detergent. The concentrations were as follows: 0%, 3%, 6%, 12.5%, 25%, 50%, and 100%. We put 5 mL of each dilution series (of detergent) into Styrofoam cups. Then 100g of potting soil will be added to each cup. Later on, we will add 4 worms to each cup. The cups will be covered with aluminum foil and sit still for 4–5 days. Finally, we emptied the contents of the cups and we looked to see how many worms survived from each cup. We recorded our observations. For the worms that lived, we also took into consideration their level of activity (how active they were after the experiment was done as compared to before the experiment was performed).

319-01 Orange You Thirsty for Some Vitamin C?

Michelle Wong & Sophia Li

(Sullivan – Chemistry)

If you ask most people if they had their daily dose of vitamin C, they would tell you they're not sure or they drank their orange juice or took their daily vitamin C tablet. If you drink orange juice every day, do you really know how much vitamin C (ascorbic acid) you're actually taking? There are so many brands of orange juices out there which contain different amounts of vitamin C. This experiment tests which brand of orange juice contains the highest amounts of vitamin C and how daily intake of vitamin C can affect your health. Different brands of orange juice were tested by using a starch indicator (which changes the color of the solution when contact is made between the ascorbic acids with itself) and the titration method (the measure of an unknown amount in a concentration). The starch solution turns into a dark purple color once iodine is added and once the eye dropper takes a small sample of one brand of orange juice, the color will turn colorless. The number of drops tells us if they have higher or lower concentration of vitamin C. This was done for all the orange juices. Results have shown that Tropicana had the least amount of vitamin C among all the brands and Pantry had the highest amount. This experiment also shows us that vitamin C is essential to our lives because it helps with the immune system and regulate metabolism and promote healthy cell growth.

319-02 Rain, Rain, Go Away!

Janae Headly

(Ross – Environment)

Lichen is a symbiotic organism consisting of over 13,000 different species. This experiment was done to test if Lichen can be used as a bio-indicator. A bio-indicator is an organism that can be used to identify air pollution in the environment. In this experiment a set of crustose, foliose, and fruticose lichen was sprayed with acid (experimental), while the other was sprayed with pure water (control). Over a period of ten days the experimental lichen started to wilt, lose color and moisture and die, whereas the control lichen stayed lush and green. Therefore lichen is an organism within our ecosystem that can be used as a bio-indicator in the environment.

319-03 Can You Multi-Text?

Elizabeth Lipov

(Aubrey – Products)

Ever seen people try to multitask while texting? In my science fair project I wanted to test whether people can really text and concentrate on other activities at the same time. I feel that this is an important topic because many people text during important activities such as driving which may put their life and the lives of others in danger. In order to

test that, I had 12 subjects complete two activities. In the first activity, they had to type up a given text while answering four questions that I asked them. In the second activity, the subjects had to walk up the stairs while typing up a story of how their day went. The controls of the experiment were the time it would take to answer the four questions and how long it took for them to walk up the set of stairs. My hypothesis is that the control would be much faster than the tested experiment.

319-04 Burning Sensation

Amanda Rueda

(Ross – Products)

What calms down the burning sensation in our mouth caused by spicy food? Taste buds react to spicy foods really well. An almost immediate reaction. There are many modern day myths now a days which say that such things as milk or bread can calm it down. What I tested in my experiment is which works better milk, bread, soda, water, and toothpaste. Which works better? Whether these myths are actually real or just plain lies? We are to figure it out.

319-05 The pH of Juices at Different Temperatures

Tiffany Loi & Hamna Muzammil

(Sullivan – Chemistry)

pH is the measure of acidity or alkalinity in a substance from the scale of 1–14. The lower the number, the more acidic it is and higher numbers indicates alkalinity. pH of juices vary but they mostly lie on the acidic side of the pH scale. Acidic substances contain more H⁺ ions while basic substances contain more OH⁻ ions. The purpose of this experiment was to find out the correlation between pH and temperature. Our hypothesis was that if the temperature increases, pH will decrease. We tested out 4 different kinds of juices (apple, orange, lemon, and grape) and placed them at different temperatures (refrigerator, room temperature, and 37 °C in an incubator). Everyday we would check their pH and compare it to each other. Our results didn't show a definite correlation because there weren't enough trials. It did show that the juices kept in the incubator were more acidic than the refrigerated ones and the ones kept at room temperature but not by much. The reason is due to equilibrium because it would shift to the right causing more H⁺ ions to be produced.

319-06 A Plant's Favorite Food

Crystal Soo

(Sullivan – Environment)

Fertilizers, Schultz, Vigoro, and Miracle-Gro, containing different ratios of macronutrients were tested in their effectiveness on mung bean plant growth; water is used as the control of the experiment. For ten days, 2 mL of each liquid was used to water the mung beans in Petri dishes respectively using a pipette. The plants were kept in a well-lit room near a window. After ten days, Plants watered with Miracle-Gro and water had the greatest height measurement while plants watered with Schultz and Vigoro had the smallest height measurement. The difference between the heights of plants using the two most effective liquids and the heights of the plants using two least effective liquids can be explained by a failure to disinfect the beans prior to experimentation. Schultz could have been the most effective fertilizer as hypothesized if mold hadn't inhibited the growth of the plants using it.

319-07 The Wonders of a Dandelion

Jasline Garcia

(Aubrey – Plants)

Many people think of dandelions as just a garden weed. Actually, dandelions are extremely healthy for the human body. Dandelions are an excellent source for vitamin C, A, B and the minerals calcium, copper, iron, and manganese. Dandelions are also

very beneficial for the digestive system, which is why I decided to test different parts of dandelions on the growth of *E. coli*, one of the bacteria found in the intestines. My question was "How do different parts of a dandelion affect bacterial growth?" I hypothesized that the roots of the dandelion will inhibit the most bacterial growth, the leaves will inhibit the least bacterial growth, and the stems would be in the middle. Dandelions were collected and each part was liquefied separately. Then, using filter paper and Petri dishes, each part was placed on *E. coli* separately. The Petri dishes were incubated overnight at 37 °C. The following day, the zones of inhibition were measured.

319-08 Out of Breath

Catherine Zhang & Diego Delgado

(Ross – Medicine)

This experiment was done to find out if hyperventilating right before running can help improve the performance of a track runner. For this experiment we had 15 males and 15 females run across a track field for 200 meters. A variable in this experiment is the amount of breaths each participant (both male and female) took before running. There were four trials performed; trial 1 being the control and trial 2, 3 and 4 were the experimental trials. In the experimental trials we had the participants take 5, 10 or 15 breaths corresponding to the trial number. Another variable in this experiment is the gender of the track runner. It was to see if hyperventilating before running would affect males more than females. We compared the performance of a male track runner that hyperventilated before running to a male track runner that didn't hyperventilate and saw if there was any significant difference. We did the same for females. According to the data and analysis, hyperventilating more breaths did help the performance of a track runner. There wasn't a significant value that proved males were affected more by hyperventilation before running than females.

319-09 Which One? Onion, Garlic, or Ginger? Study on *E. coli*.

Jasmine Lam

(Ross – Microbiology)

To compare the 3 substances, bacteria is inserted into the Petri dishes. The substances are placed on filter disks. The substance with the largest diameter in mm is most effective on *E. coli*. All materials must be dipped in alcohol and then placed through the flame of the alcohol burner. Each Petri dish is labeled and each substance is placed in the correct part of the dish. After a day of incubation, the zones of inhibitions of each substance are recorded in mm. There are a total of 3 trials and for each trial it consists of 3 Petri dishes. The results are entered into a table, line graph, and bar graph. According to the data, onion is the most effective on *E. coli*. Following is the garlic, then ginger. The hypothesis is therefore wrong because onion overall has a larger diameter in the trials.

319-10 Go Bananas!

Nazneen Sultana

(Aubrey – Plants)

Don't you just love sweet juicy fruits? The purpose of my project is to find how the sugar content of bananas changes as they ripen. A refractometer is an instrument that is used to measure the sugar content. This can help those who buy fruits and find them mushy and spoiled after a few days. Fruits become ripe due to a plant hormone, ethylene. But from these results it can be told around how much time it takes until the fruit becomes spoiled and it saves you money and missing out on something tasty. My hypothesis was that if a fruit ripens the sugar content should change since it gets sweeter. So basically you just have to slice off one third of the banana. Smash it up and take one third of the mushy banana and place it in a piece of cheesecloth. Squeeze out a few drops onto the refractometer. Read the sugar content and record it in the data table. Day by day see how the reading changes.

319-11 Surface Friction

Tommy Chen & Khizar Siddiqui

(Sullivan – Physics)

This experiment was conducted to determine how different surfaces have different frictional forces. This experiment was also conducted to find out which surface would a wooden block and a frictionless cart have the highest velocity on. By determining the surface friction and the velocity at which the object is traveling, some problems that occur in real life can be solved. For instance, knowing the frictional force created by different surfaces, a road that produces moderate amount of friction against car tires can be formed. Determining the velocity at which the car travels on the road would give an idea of how steep the road could be made without causing the car from speeding too much. In order to find these two variables, a ramp was covered with three different surface materials (aluminum foil, wax paper, and plastic wrap. A wooden block and a frictionless cart were then allowed to travel down the ramp, which was elevated at a height of 12 inches. Both objects always had to travel a distance of one meter. A motion sensor was placed at the top of the ramp and was used to determine the velocity of the objects as they went down the ramp. In conclusion, the plastic wrap produced the most friction and the aluminum foil produced the least. Also, both objects had the highest velocity on the aluminum foil and the lowest on the plastic wrap.

319-12 Can You See Me Now?

Hui Shan Yin

(Aubrey – Behavior)

Although it is the vision that occurs out of the central gaze, peripheral vision is an important part of your eyesight. Without it, we would be experiencing the world by what we see directly in front of us. With the power of peripheral visions, we are not required to turn our heads when wanting to look at our sides. In this experiment, an apparatus was constructed to measure the angle in which test subjects were able to detect color. Test subjects placed said apparatus in front of their nose and stares straight at all times during the test. Six colored shapes are moved until they are able to distinguish its colors clearly. The angle at which they say the right color is marked. Dark colored eyes may have better peripheral vision than those with light colored eyes.

319-13 Saturated Fat in Oils Tested by Tincture of Iodine

Brian Volfovski & Faina Ablyazova

(Ross – Chemistry)

The knowledge of tincture of iodine being soluble in oils and breaking up hydrogen bonds allows the testing of saturated fat levels in different oils. In order to test this we gathered twelve different types of oils, tincture of iodine, beakers, test tubes, a heater and a thermometer to test this. By placing drops of iodine into an oil and then stirring it in a water bath of 65 °C it allows the break up of hydrogen bonds and for the oil to change back to its original color. When the oil cannot change back into its original color or close to it, that means all of the hydrogen bonds have been broken in the oil. The longer it takes for this to happen the higher concentration of saturated fat levels is in the oil. At the end of the experiment it was evident that the oil that contained the lowest amount of saturated fat was walnut oil because it had the shortest time compared to the other oils and amounts of drops used to break apart all of the hydrogen bonds. Meaning that walnut oil is the healthiest out of all of the oils tested.

319-14 Green, Brown, or Clear?

Leah Harrison

(Ross – Products)

To do this experiment, one needs to gather five bananas, five apples, and five pears. One follows the procedure and observes the physical appearance. After collecting the data, the results were that the green bag kept the fruit fresher longer than the other

types of bags. My hypothesis was proven right. This experiment could have been improved by testing more fruit, and adding more than one fruit into each bag. That would have made the experiment more reliable. In conclusion, the green bags kept the fruit ripe longer.

319-15 Sunscreen or Unscreen

Elena Chung

(Ross – Products)

This experiment was performed to determine the effectiveness of different types of sun block lotions that were tested by the influence of the sun. The best lotion was concluded by the shades of blue of the solar print paper. On the other hand, this experiment was done to designate the act of protection from sunburn prompting UVB rays. Varying by the different colorations, it was easy to determine which was the best product to use. The experiment was done only on sunny days and the price ranges of the five products were approximately adjacent to each other. The areas shielded from light by the tape remained white or sky blue. The degree of darkness in the area shielded by the different sun block lotions direct the effectiveness of each lotion by blocking out the UVB rays. UVB rays are recognized to cause sunburn. After the experiment was done, it is instructed to run it under water for a while so that the image of the paper is made permanent. By the end the experiment, it is concluded that Banana Boat sun block lotion was the most effective against the other lotions because of the degree of darkness or lightness. The samples that were closest to the white was Banana boat.

319-16 Neutralizing Stomach Acidity: The Natural Way

Jason Vayner & Ron Baazov

(Aubrey – Medicine)

When people experience heartburn or indigestion, they reach for antacids such as Tums or Alka-Seltzer. Though these do relieve the pain and discomfort, chemical antacids have side effects and can cause even bigger problems in the long run. Most antacids work by neutralizing abnormally acidic gastric fluid. However, there are many natural household products that can do this as well. In this experiment we tested the neutralizing ability of chemical and natural antacids on 0.1 M Hydrochloric acid. Our hypothesis was that although the chemical antacids would cause a greater change in pH, certain natural antacids would bring it to a healthy pH range. We tested different natural and chemical antacids with a pH meter to see which would bring the acid up to a pH suitable for a healthy stomach environment (pH of 1.5–3.5).

319-17 Anything You Can See I Can See better!

Gabrielle Lynch

(Aubrey – Behavior)

Everyone knows that girls can see better than boys, right? Well many scientists have spent their careers trying to distinguish differences between female and male visions. The sense of sight is very important to the function of human life and although it may be as simple as opening your eyes, things are way more complicated. For this project, we will test whether or not visual selective attention is better amongst male or females. Participants were asked to complete different tests in which they were timed identifying different focuses. By finding the averages for each test, we hope to find data that would support our claim that females have better selective visual attention than males. If a gender is proved to be better at visual selective attention than another, it would help scientists in the future create different ways to treat sight problems according to gender.

319-18 Laundry Madness

Michael Kotlyar

(Ross – Products)

Doing laundry is a boring task, but if you want clean clothes, it's a small price to pay. Laundry detergents are effective ways of eliminating dirt that sticks to our clothes. The reason water would not be sufficient enough is because it cannot remove stains that are water soluble. Most laundry soaps consist mainly of alkali, oils, and fat. Laundry detergents however have the unique ability to remove both water-soluble and non-water soluble stains, making them the most highly used product for laundry. One end of the surfactant molecule penetrates oily soils, while the opposite end of the molecule loosens the soils and disperses them in the water. After testing three laundry detergent brands, it was seen that using less than the recommended amount does not really wash the stain off at all in some brands, but in others has close to the same effect as the recommended amount, if not better. Using more looks as if the concentration of detergent is just absorbed into the clothing and sort of comes out looking as if it had been internally stained. In the control, the stain is washed out perfectly in the reputable brand, Tide. More tests should be conducted involving more stains and brands being tested and compared to each other, but Tide has been proven to be the better brand than Oxiclean and Xtra. You might need to use more than recommended for Xtra to yield results equivalent to the other brands.

319-19 HOT OR COLD

Isabella Regine

(Ross – Chemistry)

The purpose of this experiment is to determine whether or not temperature affects color change, and how different colors affect the time at which they change. To do this experiment you start by gathering all materials, and having 6 cups of different temperatures lined up by a window where the sunlight streams in. Beforehand test the curtain by the window to see if they block the UV rays. Allow the UV beads to be exposed to sunlight for one minute and then remove them from the UV rays by closing the curtain. Then start timing. Record the data and repeat for the rest of the colors. Based on all the data, temperature does have an effect on color change. The time it took for the UV beads varied between the temperatures. And the warmer the water the faster the colors changed. Warmer temperatures speed up chemical reactions because the average kinetic energy is higher than it would be at a cooler temperature. Cool colors, such as blue, green, and purple had a longer reaction time than the warm colors, red, yellow and orange. Based on my t-test there is a significant relationship and based on research the reason is because colors absorb different wavelengths hence the difference in reaction times.

319-20 Repetition and Memory

Randal Tam

(Ross – Behavior)

The purpose of this experiment was to see if small amounts of repetition affect memory and performance. Memories are stored in the hippocampus. Whenever a memory is formed, chemicals are sent and synapses are created and added to help muscle memory and performance. In this experiment, people were told to follow a wire without touching it, first with their eyes open, then eyes closed. Then, they repeated that process, except with an increase with the amount of times followed with their eyes open in the end, after the t-test, there seemed to be no difference between the first and second trial.

320-01 Wait! Don't throw out your veggies or fruits!

Aricksha Wilshire

(Sullivan – Chemistry)

There is a need for alternate fuels or things that can serve as a small energy source. Fruits and vegetables contain electrolytes that conduct electricity. Fruits and vegetables may produce enough electricity in volts to potentially power a small device. Using 4 different variables with zinc and copper electrodes, along with a voltmeter, the voltages were no higher than one volt. Therefore the voltage produced by the fruits and vegetables are not enough to power something as large as a flashlight but more like something as small as an LED light but very dimly.

320-02 Salt Conductivity

Mahmud Ashik & Kordaye Hunt

(Sullivan – Chemistry)

Salt is an ionic compound and when dissolved in water has the ability to conduct electricity. We hypothesized that Potassium nitrate would conduct electricity best out of the salts aluminum nitrate, sulfur nitrate, Epsom salt, iodized salt, and sodium iodide. We came to a conclusion by testing these salts using Vernier conductivity probe. Though the data gathered we concluded that iodized salt(which is table salt with iodine) had the greatest conductivity.

320-03 Permanent Stain?

Yuyi Tan

(Aubrey – Chemistry)

Have you ever gotten permanent marker on your clothes? Like most stains it is a pain to get out. This experiment tests solvents to see which will be most effective in getting out the mark without damaging your clothes. The solvents include isopropyl alcohol, vinegar, Tide detergent, antibacterial soap, and hand sanitizer. The mark will be attempted to be taken out by rubbing each solvent on a line made by the Sharpie on a cotton cloth and then rinsed out. The effectiveness will be measured based on a scale of colors ranging from white to shades of gray and black. The material in a popular brand of permanent marker, Sharpie is made of pigments and alcohol. Therefore I hypothesize that the alcohol will be the most effective.

320-04 Which acne medication is the most effective on bacteria?

Syeda Rassol

(Aubrey – Microbiology)

An acne breakout has always been a problem and still is a problem in many people. No wonder why there are so many treatment products out there. Most people rely on the products for some effective results. Bacteria such as *E. coli* and *S. epidermis* are usually found on the skin causing clogged pores. The medication is supposed to remove bacteria and dead skin cells to prevent future acne. Using two percent of salicylic acid found in all of my six acne products I wanted to know which brand would be proven most effective on the two bacteria. The brands were Neutrogena, Olay Total Effects, St. Ives (apricot), Clearasil, Aveeno, and Boire. Having three trials per product was the experiment; the zone of inhibition was measured after 24 hours. The control was distilled water and the active ingredient remained constant.

320-05 The Stroop Effect: Female vs. Male

Pamela Liu

(Ross – Behavior)

This experiment contains the Stroop Effect test. The purpose of this experiment was to see if females can identify color faster than males. The hypothesis of this experiment was that females would have a shorter average time than males. To conduct this

experiment, there would be strips of paper with colored words. They contain words and its correct color ex: red; and words with its incorrect color ex: blue. There would be 10 females and 10 male volunteer test subjects. Individually, they would be tested to state the color in which each word is in, not the word. They would be timed and recorded and if there were any mistakes, it would be corrected and continued. This would be repeated for two trials for both tests. As a result, both genders had close times however; the females were 1–2 seconds, on average, quicker than males in all trials.

320-06 The amount of bacteria found on keyboards (Morning vs. Evening)

Winnie Li & Daniel Thornton

(Ross – Environment)

This experiment was conducted to try and figure out whether there are more bacteria on the computers in the morning or in the evening. We are doing this experiment because most people use the computers through out the day and it would be best for our health if we knew how much bacteria we were actually touching. We conducted the experiment three time using cotton tipped sterile swabs and agar gel in Petri dishes. We went to 8 different rooms and swabbed the “enter” key of each computer in the morning and then again in the evening. After doing a t-test on the three different data sets, we discovered that there is an insignificant difference in the amount of bacteria in the morning than in the evening. In conclusion, there is no difference in using the computer in the morning than in the evening regarding bacteria.

320-07 Watch Where You’re Going!

Winnie Li

(Aubrey – Behavior)

Whoa, watch where you’re walking! All around the world, everyone is texting; at school, at home, and even walking on the streets. There are many dangers that can occur while walking on the streets, and even more dangers while someone is texting while walking. For this experiment I would see if texting affects the way a person walks in a straight line. Test subjects are to walk in a straight line while texting the story of “The Three Little Pigs”. While they’re too busy concentrating, I would count how many times they would walk off the line. So after this experiment it could really show the dangers of texting and walking. If someone is texting, then they will not be able to walk in a straight line.

320-08 It’s a small world after all

Lily Luo & Kelly Tan

(Ross – Microbiology)

This experiment was done to find out whether there is a significant difference in bacteria growth between the girls’ and the boys’ bathrooms. To accomplish this, bacteria must be collected everyday in the morning and the afternoon. The reason for going in the morning and the afternoon is to see how much bacteria have grown throughout the day. Using sterile cotton swabs, bacteria would be collected and put in the Petri dishes. To make sure that the results are accurate, we would be going to three different types of bathrooms. The bathrooms that we would be going to are the boys’ bathroom on the second floor, the girls’ bathroom on the third floor, the bathrooms in the basement and the bathrooms in the locker rooms In these bathrooms, we would be testing three different areas. The areas chosen were: the inside doorknob, the toilet seat, and the flusher.

320-09 Yum Yum Gum Gum Bacteria Poof!

Lawrence Zhang

(Aubrey – Cellular)

Which type of gum would you buy when you stop by a grocery? Most people would just buy some random flavor that they would like. But what if you knew which type of

chewing gum flavor would benefit your mouth the most. In my experiment I would be testing different flavors of chewing gum and which of these flavors would eliminate the most amounts of bacteria in your mouth. My hypothesis is that cinnamon flavor chewing gum would eliminate the most amounts of bacteria in your mouth. The bacteria I would be using are called *S. epidermis*. I would test the different flavors of gum by making them into tiny antibiotic disks by hole punching them. I would eject 1.6 mL of the bacteria into 6 Petri dishes with agar inside and then I would place the antibiotic disks inside and incubate it at 25 °C. Then I would measure the zone of inhibition and by comparing the different zone of inhibition, the one with the largest zone of inhibition would be the flavor that would eliminate the most amount of bacteria.

320-10 Bacteria vs. Disinfecting Wipes

Kate Wong

(Sullivan – Products)

Why use a cleaning spray and a towel, if you can use a disinfecting wipe? Generally, disinfecting wipes clean tubs, countertops and much more. But, which brand of these convenient wipes work the best? In this experiment, two of the top leading brands, Lysol and Clorox, and a generic brand, CVS, were used. These wipes were tested against two room temperature bacteria, *B. megaterium* and *S. marcescens*. *B. megaterium* grows in soil, while *S. marcescens* can be found in most bathrooms. Based on the experiment, Lysol eliminated the most *B. megaterium* bacteria, and CVS destroyed the most *S. marcescens* bacteria.

320-11 Salt's effect on copper corrosion

Louis Barbero

(Ross – Chemistry)

In this experiment I am testing four different concentrations of salt on 4 copper pipes. The first concentration is 0 g, the second is 5 g, the third is 10 g, and the fourth is 20 g. I am mixing the salt with 13 oz of water in a 16 oz cup and placing a 3 inch copper pipe in each. The copper pipes will be sitting in a room temperature environment. A 5mL sample of the water will be taken once a day in a 10mL test tube. After the sample is taken I put half a copper testing tablet in the test tube and shake until it dissolves. Once the tablet is dissolved I compare the color of the solution to a copper color indication chart. If the solution is orange/brown there is little to no copper present in the water. If the color is purple then there is a large amount of copper present in the solution. To measure the copper in the solution I used ppm.

320-12 Polyethylene or Polyvinyl Chloride

Aiysha Ashfaq

(Ross – Chemistry)

Plastics are very common products used on an everyday bases. Plastic wraps are mostly used in the kitchen to act as shields against evaporation of water vapor found in foods. Thus they help store and keep food fresh longer. Plastics are made of polymers, two of them being, polyethylene and polyvinyl chloride. Since the polymers help make the plastics properties, including its ability to prevent evaporation, plastic wrap can be used to determine which polymer does its job best. In this experiment I used Glad plastic wrap, Reynolds's plastic and aluminum wrap. The aluminum wrap was added just out of curiosity. For each wrap I filled three graduated cylinders with 10mL of water and covered it accordingly. Each day for seven days I recorded its volume changes. Glad plastic wrap which contains polyethylene turned out to have a stronger barrier and be better at preventing evaporation than the Reynolds's plastic wrap that contained polyvinyl chloride. The aluminum foil turned out to have the strongest barrier and thus was better at preventing evaporation than the plastics.

320-13 Freeze Up Water!

Ying Q. Liu

(Ross – Chemistry)

Water has a freezing point of 0 °C. By the presence of different substances added to the water will affect its freezing point also defined as freezing point depression. Freezing point depression occurs when the solute is added to a solvent and the temperature will be lowered than the solvent alone. Solutes are substances that would dissolve in water. While solvent are the solutions such as in this experiment, water. Using molar mass and concentration formula to figure out how much of each substance would be needed to mix with the water solution. An certain amounts of trials were conducted for each substance to 100ml of water in different concentrations. Temperature of the mixture were recorded when ice crystals formed. A t-test was conducted to show the differences between water with other substances and substances to each other. With the presence of substances in water, it did affect the water's freezing point but only half of the substances prove the freezing point depression.

320-14 Who's your Sugar Daddy?

Klaudia Wojciechowska

(Ross – Products)

In this experiment the glucose concentrations of many different common fruits and juices were tested. Fruits like apples, grapes, and bananas, and juices like Capri Sun, Sunny D, and Arizona were tested. From looking at the results it can be concluded that the hypothesis was correct, and juices do have a higher glucose concentration than fruits. This is not a surprise, but what is a surprise is the high amounts of sugar that some manufacturer's added to their products, and also the major differences of glucose concentrations between different fruits.

320-15 The Effect of Mouthwash on Bacteria

Roman Shayko

(Sullivan – Microbiology)

Tested the effectiveness of three different mouthwash brands on the two different bacterias. Scope, Listerine and Crest were tested on both *S. epidermis* and *E. coli* with three trials given to each bacteria. Scope had the highest average of zones of inhibition in the end of all three trials. Listerine had the lowest average of zones of inhibition and crest came in second in the end of the three trials that were tested.

320-16 Under Armour vs. Cotton Shirts: Who Dries Faster?

Solomon Chan

(Aubrey – Products)

Sweaty clothes and sticky bodies are not a pleasant feeling for anyone. That is what Kevin Plank, founder of Under Armour clothing, felt when he was constantly changing cotton shirts during football practice. This lead Planks to develop Under Armour's special technology that claim to dry 5x faster than regular cotton shirts. Being a athlete this tickled my curiosity and lead me to test this claim and found out of it was really true. The experiment that will be conducted will determine if Under Armour's claim, that it dries 5x faster than regular cotton, is true or not. I hypothesize that the claim is true. Under Armour material and a regular cotton shirt will be wet. Every so often dry cobalt chloride paper (which tests for the presence/level of humidity) will be in contact with both clothing materials and that will give an approximation to how long it takes both shirts to dry. 3 total trials will be done.

320-17 The Effect of Sports Drinks on a Female Athlete's Endurance

Roxana Bravo

(Ross – Medicine)

Which sports drink will improve the endurance of a female athlete? This experiment was performed to find if Gatorade (Orange), Powerade (Mountain Blast), Vitamin Water (Dragon Fruit), or water is a good energy boosting sports drink to ingest during exercise. Each participant was given approximately 300 mL of a certain fluid to drink prior to running. They were then explained to keep running until they felt exhaustion and no longer had the ability to keep going at the standard constant speed. After the participant decided to stop their time was recorded. Each athlete needed to complete three trials for each fluid. The athletes were given specific days to return for their trials to resume a constant resting period between trials. A jogging session was also required to warm up the muscles and have the body active before each trial. Athletes were not chosen in respect to their physical capacity but for the active life they live.

320-18 Sugar Rush

Ziva Rubinstein

(Ross – Behavior)

Caffeine and sugar are in the everyday diet of most Americans, so it is important to know how sugar and caffeine really affect the body. Does sugar and caffeine actually affect the pulse and respiratory rate of teenagers? To find this out, a study was conducted using a total of 10 teenage males and females who were then given the supplements of water (control), soda, coffee, and an energy drink, and after a half an hour their pulse and respiratory rate were recorded. This was repeated 3 times for accuracy. Afterward, using t-testing, the results of the three supplements were compared to the control in order to see if there was a significant difference in the pulse and heart rate. The results concluded that there was no significant change in the pulse but there was a significant change in the respiratory rate. The results also concluded that even though the males naturally had higher pulses and respiratory rates than the females, both genders had the same rate of increase so there was no significant difference between the genders.

320-19 Puzzles for You!

Olivia Kyi & Verna Zhao

(Ross – Behavior)

In this experiment a person is listening to music while doing a puzzle. Listening to music in everyday life does not seem like a multitask and more like something we do every day, something that is part of life even when you do not notice it. Both female and male students is listening to classical music and being timed to do a puzzle meanwhile another group of male and female are in a quiet room concentrating to do a puzzle without interruptions. This puzzle contains of 100 pieces and are different.