

## **2020 Awards**

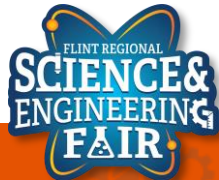
- Junior Division**
- Elementary Division**

# Special Awards - Elementary



# Flint River Watershed Coalition

- Promotion of Clean Water in Genesee County
  - Winner receives a free paddle pass
- John Tewolde
  - Brendel Elementary
  - Filtering Water Using a Variety of Efficient Filtration Methods



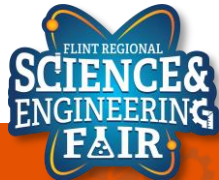
# Genesee County Medical Society

- Excellence in Medical Studies
  - Winner receives a plaque
- Katherine Shorkey
  - Hahn Intermediate School
  - All About That Blood Pressure



# Hurley Medical Center

- Excellence in Medical Studies
  - Winner receives a trophy
- Amaya Graebert
  - St. Clair Middle School
  - We Got the Beat



# Gupta Science Foundation

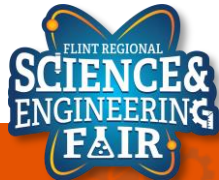
- Excellence in STEM
  - Winners receive \$150
- Noor Azeim
  - Genesee Academy
  - Solar Heater
- Alexander Ostrander
  - Torrey Hill Intermediate School
  - Toothbrush Trouble



# Kettering University – Summer Programs

- Excellence in STEM.
  - Recipient receives a scholarship to attend the STEM Excellence - LEGO Dance and Parade Camp.
- John Tewolde
  - Brendel Elementary
  - Filtering Water Using a Variety of Efficient Filtration Methods

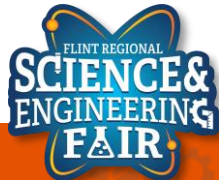
Kettering  
UNIVERSITY



# Kettering University – Summer Programs

- Excellence in STEM.
  - Recipient receives a scholarship to attend the STEM Excellence - LEGO Mission to Space Camp.
- John Tewelde
  - Brendel Elementary
  - Filtering Water Using a Variety of Efficient Filtration Methods

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# McLaren Health Care

- Excellence in Behavioral and Social Science
- John Tewelde
  - Brendel Elementary
  - Filtering Water Using a Variety of Efficient Filtration Methods
- Zishan Lal
  - Keewahdin Elementary
  - Memory Mania

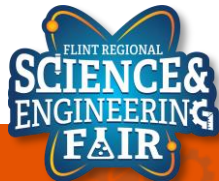


# Michigan Association of Hazardous Material Professionals

- Excellence in Environmental Science and Engineering
  - Winner receives \$50
  
- John Tewolde
  - Brendel Elementary
  - Filtering Water Using a Variety of Efficient Filtration Methods

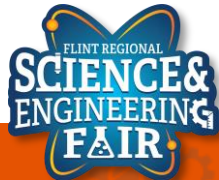


Michigan Association of Hazardous Materials Professionals



# MIDHHS Explore Lab Science

- Creativity and exploration
  - Winners receive medals
- 3<sup>rd</sup> Award
- Amaya Graebert
  - St. Clair Middle School
  - We Got The Beat



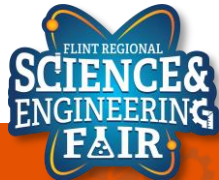
# MIDHHS Explore Lab Science

- Creativity and exploration
  - Winners receive medals
- 2<sup>nd</sup> Award
- John Tewolde
  - Brendel Elementary
  - Filtering Water Using a Variety of Efficient Filtration Methods



# MIDHHS Explore Lab Science

- Creativity and exploration
  - Winners receive medals
- 1<sup>st</sup> Award
- Muhammad Najjar
  - Genesee Academy
  - To Dry or Not to Dry: Do Hot Air Dryers Spread Bacteria in Public Restrooms?



# Special Awards – Junior



# Ascension Genesys

- Excellence in Behavioral & Social Science
- Mohamad Jafari
  - Genesee Academy
  - Getting Sick Might Be In Your Hands

GENESYS



Ascension



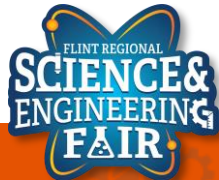
# Ascension Genesys

- Excellence in Microbiology
- Mohamad Jafari
  - Genesee Academy
  - Getting Sick Might Be In Your Hands

GENESYS



Ascension





# Ascension Genesys

- Excellence in Plant Sciences
- Evelyn Wang
  - Jefferson Middle School
  - Sweet or Starchy?

GENESYS



Ascension



# Ascension Genesys

- Excellence in Medicine & Health Sciences
- Mathew Thomas
  - Saginaw Arts and Sciences Academy
  - The Effect of High-Fructose Corn Syrup 55 on the Heart Rate of *Daphnia magna*

GENESYS



Ascension



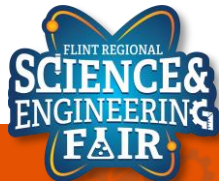
# Ascension Genesys

- Excellence in Cellular & Molecular Biology
- Hannah Ober
  - Saginaw Arts and Sciences Academy
  - Effects of Vitamins on the Yeast Fermentation Process

GENESYS



Ascension



# Ascension Genesys

- Excellence in Animal Science
- Mathew Thomas
  - Saginaw Arts and Sciences Academy
  - The Effect of High-Fructose Corn Syrup 55 on the Heart Rate of *Daphnia magna*

GENESYS



Ascension



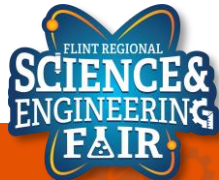
# Ascension Genesys

- Excellence in Biochemistry
- Hannah Ober
  - Saginaw Arts and Sciences Academy
  - Effects of Vitamins on the Yeast Fermentation Process

GENESYS



Ascension



# Ascension Genesys

- Excellence in Chemistry
- Hannah Ober
  - Saginaw Arts and Sciences Academy
  - Effects of Vitamins on the Yeast Fermentation Process

GENESYS



Ascension



# Ascension Genesys

- Excellence in Earth & Planetary Science
- Jett Miller
  - Saginaw Arts and Sciences Academy
  - Early Earthquake Detection

GENESYS



Ascension



# Ascension Genesys

- Excellence in Environmental Science
- Mohamad Jafari
  - Genesee Academy
  - Getting Sick Might Be In Your Hands

GENESYS



Ascension





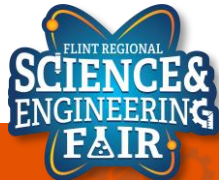
# Ascension Genesys

- Excellence in Environmental Management
- Madelyn Flynn
  - Davison Middle School
  - Surviving The Surge



# Flint River Watershed Coalition

- Promotion of Clean Water in Genesee County
  - Winners receive a free paddle pass
- Omar Abdulrazzak
  - Genesee Academy
  - Rock salt: not a solution for our future
- Harman Singh
  - Saginaw Arts and Sciences Academy
  - Lead Content in Water



# Genesee County Medical Society

- Excellence in Medical Studies
  - Winner receives a plaque
- Cade Coonan
  - Saginaw Arts and Sciences Academy
  - The Effects of Vaping on Porous Tissue



# Hurley Medical Center

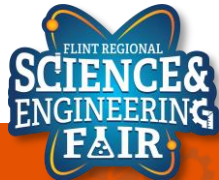
- Excellence in Medical Studies
  - Winner receives a trophy
- Abby Latchana
  - Davison Middle School
  - Keep Your Head In The Game



# Kettering University – Summer Programs

- Excellence in STEM.
  - Recipient receives a scholarship to attend the Computer Science /FTC Studio Java Programming Camp
  
- Joshua Tewolde
  - Grand Blanc West Middle School
  - Using Earth Science to Predict Tsunamis and Save Lives

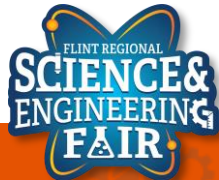
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# Kettering University – Summer Programs

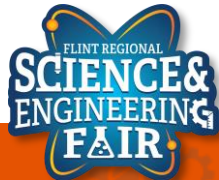
- 1<sup>st</sup> Alternate: Jett Miller
  - Saginaw Arts and Sciences Academy
  - Early Earthquake Detection
- 2<sup>nd</sup> Alternate: Zakariya Alkotob
  - Genesee Academy
  - Which Plane Is Stealthiest?

Kettering  
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# Matthew Bauerle Mathematics Award

- Excellence in Mathematics
- 1<sup>st</sup> Award: \$25 Gift Card
- Niloy Islam
  - Saginaw Arts & Sciences Academy
  - A Simple Way to Reduce Radiation at Home



# Michigan Association of Hazardous Material Professionals

- Excellence in Environmental Science and Engineering
  - Winner receives \$50
  
- Mohamad Jafari
  - Genesee Academy
  - Getting Sick Might Be In Your Hands



Michigan Association of Hazardous Materials Professionals





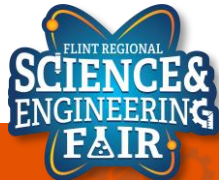
# MIDHHS Explore Lab Science

- Creativity and exploration
  - Winners receive medals
- 3<sup>rd</sup> Award
- Andrew Shorkey
  - Davison Middle School
  - Ultra Violent Ultraviolet



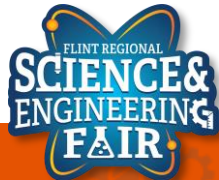
# MIDHHS Explore Lab Science

- Creativity and exploration
  - Winners receive medals
- 2<sup>nd</sup> Award
- Jett Miller
  - Saginaw Arts and Sciences Academy
  - Early Earthquake Detection



# MIDHHS Explore Lab Science

- Creativity and exploration
  - Winners receive medals
- 1<sup>st</sup> Award
- Niloy Islam
  - Saginaw Arts & Sciences Academy
  - A Simple Way to Reduce Radiation at Home



# US Navy and Marine Corps

- Excellence in Science, Technology, Engineering and Math
  - Winners receive medals
- Addison Wagner
  - Saginaw Arts & Sciences Academy
  - Testing the Most Effective Recoil Pad Materials
- Blaise Maliskey
  - Saginaw Arts & Sciences Academy
  - Testing Pitch On Propellers



# US Navy and Marine Corps

- Excellence in Science, Technology, Engineering and Math
  - Winners receive medals
- Jett Miller
  - Saginaw Arts and Sciences Academy
  - Early Earthquake Detection
- Mohamad Jafari
  - Genesee Academy
  - Getting Sick Might Be In Your Hands



# US Navy and Marine Corps

- Excellence in Science, Technology, Engineering and Math
  - Winners receive medals
  
- Madelyn Flynn
  - Davison Middle School
  - Surviving The Surge



# Lemelson Early Inventor Prize

- Invent a promising solution to solve real-world problems
- Matlyn Miller
  - Saginaw Arts and Sciences Academy
  - Reducing the Carbon Footprint



# Broadcom MASTERS

- Open to all 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade students that were registered to participate in the 2020 Flint Regional Science and Engineering Fair.





# Elementary – Grand Awards



# 6<sup>th</sup> Award

- \$50 Cash
- Noor Azeim
  - Genesee Academy
- Katherine Shorkey
  - Hahn Intermediate School
- Taha Soukar
  - Genesee Academy
- John Tewolde
  - Brendel Elementary
- Elizabeth Wells
  - Homeschool



# 5<sup>th</sup> Award

- \$75 Cash
- Grace Herrick
  - St. Clair Middle School
- Zishan Lal
  - Keewahdin Elementary
- Jack Lucas
  - St. Clair Middle School
- Alexander Ostrander
  - Torrey Hill Intermediate School



# 4<sup>th</sup> Award

- \$100 Cash
- Mariam Alkotob
  - Genesee Academy
- Reham Galal
  - Genesee Academy
- Bilal Mclaughlin
  - Genesee Academy



# 3<sup>rd</sup> Award

• \$150 Cash

• Muhammad Najjar  
 – Genesee Academy  
 – To Dry or Not To Dry: Do Hot Air Dryers Spread Bacteria In Public Restrooms?

## To Dry or Not to Dry Do Air Dryers Spread Bacteria in Public Restrooms?

### Hypothesis

If people are dried in a public restroom with a Dyson Airblade, Xlerator, paper towels, or hand-dryer, there will be more bacteria on hands dried with a Dyson Airblade than hands dried with the hand-dryer, paper towels, or hand-dryer. If people are dried in a public restroom with the hand-dryer, there will be more bacteria on hands dried with the hand-dryer than hands dried with the paper towel or with an air-dryer. The more bacteria on hands, the more likely they are to spread bacteria to other people. Therefore, if people are dried in a public restroom with a Dyson Airblade, there will be more bacteria on hands than if they are dried with a paper towel or with an air-dryer. The more bacteria on hands, the more likely they are to spread bacteria to other people. Therefore, if people are dried in a public restroom with a Dyson Airblade, there will be more bacteria on hands than if they are dried with a paper towel or with an air-dryer.

### Introduction

When washing your hands in a public restroom, someone else you will see may prefer to dry your hands. They will either dry your hands with a paper towel or with an air-dryer. Both have their own advantages. Some people prefer to dry their hands with paper towels. At the same time, paper towels are expensive and not as convenient. An air-dryer, on the other hand, is a lot more convenient than using a paper towel. If people are dried in a public restroom with a Dyson Airblade, there will be more bacteria on hands than if they are dried with a paper towel or with an air-dryer. The more bacteria on hands, the more likely they are to spread bacteria to other people. Therefore, if people are dried in a public restroom with a Dyson Airblade, there will be more bacteria on hands than if they are dried with a paper towel or with an air-dryer.

### Procedure

1. Locate each type of the hand dryer in a public restroom.
2. Record 10 subjects to participate in experiment.
3. Give number to each white area below in designated subject and drying method or untreated hands.

### Results

**Trial #4**

**Surfaces of Air Dryers**

**Hand Drying Methods**

**Conclusion**

The hypothesis was that drying hands with the Dyson Airblade hand dryer would spread more bacteria than other hand-drying methods. Data supported this hypothesis. The average number of bacteria colonies on hands dried with the Dyson Airblade was 14.8, compared to 10.2 for paper towels and 9.8 for hand-dryers. The average number of bacteria colonies on hands dried with the Dyson Airblade was 14.8, compared to 10.2 for paper towels and 9.8 for hand-dryers. The average number of bacteria colonies on hands dried with the Dyson Airblade was 14.8, compared to 10.2 for paper towels and 9.8 for hand-dryers.

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### Hand Drying Methods

**Dyson AirBlade**

**Xlerator**

**Paper Towel**

**Naturally Dry**



# 2<sup>nd</sup> Award

- \$250 Cash
- Amaya Graebert
  - St. Clair Middle School
  - We Got The Beat

## WE GOT THE BEAT!


What is the most accurate way to monitor heart rate?

**Introduction**

I finished my health education class at St. Clair Middle School. My teacher, Mrs. [Name], explained that we should have a health project. We were given a choice of topics. I chose to research heart rate. I found that heart rate is the number of times your heart beats per minute. It is affected by many things, such as exercise, stress, and age. I decided to compare three different ways of measuring heart rate: a manual pulse check, a heart rate monitor, and a fitness tracker. I will explain how I did this and what I learned.

**Background**

Heart rate is the number of times your heart beats per minute. It is an important indicator of your overall health. A normal heart rate for a person at rest is between 60 and 100 beats per minute. Factors that can affect heart rate include exercise, stress, age, and certain medications. There are several ways to measure heart rate, including manual pulse checking, heart rate monitors, and fitness trackers. Each method has its own advantages and disadvantages. This project aims to determine which method is the most accurate for monitoring heart rate.



**The Data**

I performed my experiment with the following steps: I calculated the average heart rate of each participant using the three methods. I then compared the results to see which method was the most accurate. The data shows that the heart rate monitor was the most accurate, followed by the fitness tracker, and the manual pulse check was the least accurate.

| Participant | Manual Pulse Check | Heart Rate Monitor | Fitness Tracker |
|-------------|--------------------|--------------------|-----------------|
| 1           | 72                 | 72                 | 72              |
| 2           | 68                 | 68                 | 68              |
| 3           | 75                 | 75                 | 75              |
| 4           | 70                 | 70                 | 70              |
| 5           | 73                 | 73                 | 73              |
| 6           | 69                 | 69                 | 69              |
| 7           | 71                 | 71                 | 71              |
| 8           | 74                 | 74                 | 74              |
| 9           | 67                 | 67                 | 67              |
| 10          | 76                 | 76                 | 76              |
| 11          | 70                 | 70                 | 70              |
| 12          | 73                 | 73                 | 73              |
| 13          | 68                 | 68                 | 68              |
| 14          | 71                 | 71                 | 71              |
| 15          | 74                 | 74                 | 74              |
| 16          | 69                 | 69                 | 69              |
| 17          | 72                 | 72                 | 72              |
| 18          | 70                 | 70                 | 70              |
| 19          | 73                 | 73                 | 73              |
| 20          | 68                 | 68                 | 68              |
| 21          | 71                 | 71                 | 71              |
| 22          | 74                 | 74                 | 74              |
| 23          | 69                 | 69                 | 69              |
| 24          | 72                 | 72                 | 72              |
| 25          | 70                 | 70                 | 70              |
| 26          | 73                 | 73                 | 73              |
| 27          | 68                 | 68                 | 68              |
| 28          | 71                 | 71                 | 71              |
| 29          | 74                 | 74                 | 74              |
| 30          | 69                 | 69                 | 69              |
| 31          | 72                 | 72                 | 72              |
| 32          | 70                 | 70                 | 70              |
| 33          | 73                 | 73                 | 73              |
| 34          | 68                 | 68                 | 68              |
| 35          | 71                 | 71                 | 71              |
| 36          | 74                 | 74                 | 74              |
| 37          | 69                 | 69                 | 69              |
| 38          | 72                 | 72                 | 72              |
| 39          | 70                 | 70                 | 70              |
| 40          | 73                 | 73                 | 73              |
| 41          | 68                 | 68                 | 68              |
| 42          | 71                 | 71                 | 71              |
| 43          | 74                 | 74                 | 74              |
| 44          | 69                 | 69                 | 69              |
| 45          | 72                 | 72                 | 72              |
| 46          | 70                 | 70                 | 70              |
| 47          | 73                 | 73                 | 73              |
| 48          | 68                 | 68                 | 68              |
| 49          | 71                 | 71                 | 71              |
| 50          | 74                 | 74                 | 74              |

**Variables**

**Independent Variable:** The method of monitoring heart rate.

**Dependent Variable:** The accuracy of the heart rate measurement.

**Controlled Variables:** The location of the heart rate measurement, the time of day, the weather, and the participant's physical activity level.

**Procedure**

I performed my experiment with the following steps: I calculated the average heart rate of each participant using the three methods. I then compared the results to see which method was the most accurate. The data shows that the heart rate monitor was the most accurate, followed by the fitness tracker, and the manual pulse check was the least accurate.

**Conclusion**

Based on my findings, the heart rate monitor is the most accurate method for monitoring heart rate. The fitness tracker is also a good option, but it is less accurate than the heart rate monitor. The manual pulse check is the least accurate method for monitoring heart rate. This information is important for anyone who wants to monitor their heart rate accurately.

# 1st Award

- \$300 Cash
- Anna Hansen
  - Hahn Intermediate School
  - Are You Protected?

## Are You Protected?

### Introduction

When I started, I thought I'd just experiment. However, this project became a lot more interesting in understanding what method of sun protection is best for our bodies. In our world, the statistics reveal a scary picture. Other kids can benefit from my experiment by knowing what to wear when going outside without the burning, stinging sunburns, or staying under the sun. My project helps to know if you need to wait there to benefit outside before jumping in a pool or going outside under the sun. Also, this project compares different brands of sunscreens, application methods, and age of sunscreens to see what works best. This project also investigates how sunscreens compare to tanning and an anti-tan product and how they work.

### Procedure

1. I started my project by researching the different types of sunscreens and their ingredients. I found that there are two main types of sunscreens: chemical and physical. Chemical sunscreens absorb the UV rays and prevent them from reaching the skin. Physical sunscreens sit on top of the skin and reflect the UV rays away from the body. I decided to use physical sunscreens because they are easier to apply and they don't irritate the skin. I also researched the different brands of sunscreens and their ingredients. I found that zinc oxide and titanium dioxide are the most common ingredients in physical sunscreens. I decided to use zinc oxide because it is more natural and it doesn't irritate the skin. I also researched the different application methods and I found that spraying is the most effective. I decided to use spraying because it is the most convenient and it covers the most area. I also researched the different ages of sunscreens and I found that the best age is 15-20 years old. I decided to use 15-20 year old sunscreens because they are the most effective and they are the most convenient. I also researched the different anti-tan products and I found that the best one is a natural one. I decided to use a natural anti-tan product because it is the most effective and it is the most convenient.

### Results

After we conducted the experiment testing a wet environment versus a dry environment immediately after applying sunscreen, we found that the wet environment was the most effective. All of the kids sunscreens worked very well but only one was for both UVA and UVB. The only exception to this was the older sunscreens. Another brand that worked well was the one that was for both UVA and UVB. My assumption is that newer sunscreens stick to your body better from wet or waxy year old sunscreens. The wet guard and older one that performed as well as the sunscreens of both wet and dry environments.

From our experiment we can also compare different applications of sunscreens: rub on, spray, and stick rub on. The stick rubs off applications of sunscreen worked well for the UVB spectrum but were not as good for the UVA spectrum. The UVA is the most harmful of the rays because it can penetrate the skin and cause damage. The wet guard worked the best, so they came in second and the stick came in last. We believe the stick did poorly because it was manufactured in 2012.

Our data includes the age of the sunscreen was the biggest factor in protecting a person from the sun. Older sunscreens still protect as well against the UVA rays which were better while a person's skin has the UVB rays. Since 80% of UV radiation is UVA, the fact that the age of sunscreens can make a difference when using it extreme conditions like Florida.

From our experiment we can also compare the brand versus the protection from UVA and UVB. I found that zinc oxide was the best as the ingredients found in the sunscreens. I found that the sunscreens Blue Guard and HydroCare these Zinc performed best for UVA and UVB and dry environments because they contained Zinc Oxide. During my research I found that Zinc Oxide also has the benefit of being able to block out the sun's rays. The other ingredients that were better than zinc oxide. Also, the use of the product of Zinc Oxide is better than zinc oxide. Also, the use of the product of Zinc Oxide because it does not get into our bodies. Antiperspirant and deodorant found in SunCare, CosmoCare, and Newer Sport did not provide the protection of the others.

Another result is that you do not have to wait after you apply sunscreen to enter a pool, lake, or the beach.

Finally, the data shows that zinc has sticks and sticks greatly provide the most amount of protection from the sun in Florida's climate of wet and dry for both UVA and UVB. The great thing about a wet guard and wet gel is that you can have the protection from the sun because you are not putting chemicals on your body.

### Problem/Hypothesis

The project investigates several problems:  
 How does the effectiveness of sunscreens (UVA and UVB) measured compare to dry or waxy versus in water humidity?  
 Do ingredients in sunscreens affect the UVB spectrum and the UVA spectrum?  
 What types of applications of sunscreens (rub on, spray, and stick) work best for protection from the sun?  
 How long do sunscreens protect the protection of a sunscreen after?  
 Do ingredients in sunscreens affect the UVB spectrum and the UVA spectrum?  
 What sunscreen brands are best of protecting against UVB versus UVA at the beach?  
 How long do sunscreens protect the protection of a sunscreen after?  
 Do ingredients in sunscreens affect the UVB spectrum and the UVA spectrum?  
 How long do sunscreens protect the protection of a sunscreen after?  
 Do ingredients in sunscreens affect the UVB spectrum and the UVA spectrum?  
 How long do sunscreens protect the protection of a sunscreen after?  
 Do ingredients in sunscreens affect the UVB spectrum and the UVA spectrum?

### Data Analysis

### Conclusion

The main conclusion I arrived at is to wear a wet guard or while the hot weather possibly is protected from the sun. My experiment shows it provides the most amount of protection in both UVA and UVB rays to the wet sunscreens and doesn't use chemicals with the.

Secondly, you don't have to wait to enter water after sunscreen is applied. I thought I'd wait until only one sunscreens in our class.

Finally, I discovered to be in the wet, old sunscreens should be avoided as it did not provide as good of protection as newer sunscreens. Also, when choosing a brand, look for ingredients of Zinc Oxide or Titanium Dioxide. These ingredients work best for both UVA and UVB and are safe because the zinc oxide enters the human bloodstream like other sunscreens that contain Antiperspirant, Hydroxide, and Octylamine.

### Variables

Independent: (Sunscreen age in years, Sunscreen ingredients, Application type, Skin coloring (SPF), Age of participants)  
 Dependent: (level of protection UVA & UVB measured in minutes)  
 Control: All participants using SPF 30, same day (no clouds), application of sunscreens (rubbed in evenly)

### Background

In order to understand how to best effectiveness of different protection methods, I researched how sunlight affects the body. I learned about the effects of UV rays on the skin. UV rays can cause skin damage and skin cancer. UV rays can also cause sunburns and tanning. I learned that UV rays can be blocked by sunscreen. I also learned that UV rays can be blocked by clothing. I also learned that UV rays can be blocked by shade. I also learned that UV rays can be blocked by sunglasses. I also learned that UV rays can be blocked by hats. I also learned that UV rays can be blocked by umbrellas. I also learned that UV rays can be blocked by awnings. I also learned that UV rays can be blocked by canopies. I also learned that UV rays can be blocked by awnings. I also learned that UV rays can be blocked by canopies.

# Junior – Grand Awards





# 6<sup>th</sup> Award – Earth / Chemical

- \$50 Cash
- Omar Abdulrazzak
  - Genesee Academy
- Emma Guza
  - Saginaw Arts & Sciences Academy
- Alexis Kahn
  - Lake Fenton Middle School
- Eman Khan
  - Genesee Academy



# 6<sup>th</sup> Award – Earth / Chemical

- \$50 Cash
- Arjya Misra
  - Saginaw Arts & Sciences Academy
- Alicia Soukhojak
  - Saginaw Arts & Sciences Academy
- Joshua Tewolde
  - Grand Blanc West Middle School



# 6<sup>th</sup> Award – Life Science

- \$50 Cash
- Cailan Anton
  - Saginaw Arts & Sciences Academy
- Claire Atkinson
  - St. Pius X Catholic School
- Alex Barrett
  - Davison Middle School
- Hailey Bristle
  - Davison Middle School



# 6<sup>th</sup> Award – Life Science

- \$50 Cash
- Anjali Debrah
  - Saginaw Arts & Sciences Academy
- Miriam Haddad
  - Saginaw Arts & Sciences Academy
- Akhilesh Kanmanthreddy
  - Saginaw Arts & Sciences Academy



# 6<sup>th</sup> Award – Life Science

- \$50 Cash
- Sara Meikle
  - Davison Middle School
- Sydney Panduren
  - Davison Middle School
- Sarah Parashar
  - Saginaw Arts & Sciences Academy
- Grace Roberts
  - Davison Middle School



# 6<sup>th</sup> Award – Life Science

- \$50 Cash
- Abigail Siekierski
  - Davison Middle School
- Shaylynn Summers
  - Davison Middle School



# 6<sup>th</sup> Award – Physical / Engineering

- \$50 Cash
- Brayden Archambeau & Ian Martin
  - Linden Middle School
- Ben Hartman
  - Davison Middle School
- Jaydan Howey
  - Davison Middle School
- Luke Jasinksi
  - Holy Family
- Aubrey Laffoon
  - Saginaw Arts & Sciences Academy



# 6<sup>th</sup> Award – Physical / Engineering

- \$50 Cash
- Abby Latchana
  - Davison Middle School
- Pastor Ricardo
  - Saginaw Arts & Sciences Academy
- Hudson Strayer
  - Saginaw Arts & Sciences Academy
- Olivia Wright
  - Davison Middle School





# 5<sup>th</sup> Award – Earth / Chemical

- \$75 Cash
- Juaninah Ambreen
  - Genesee Academy
- Ally Lumsden
  - Davison Middle School



# 5<sup>th</sup> Award – Life Science

- \$75 Cash
- Cade Coonan
  - Saginaw Arts & Sciences Academy
- Shaanbir Doad
  - Saginaw Arts & Sciences Academy
- Marisa Maurer
  - Saginaw Arts & Sciences Academy
- Emelia Murphy
  - Davison Middle School



# 5<sup>th</sup> Award – Life Science

- \$75 Cash
- Harman Singh
  - Saginaw Arts & Sciences Academy
- Evelyn Wang
  - Jefferson Middle School



# 5<sup>th</sup> Award – Physical / Engineering

- \$75 Cash
- Noor Aftab
  - Genesee Academy
- Samuel Gagnon
  - Gagnon Family Homeschool
- Blaise Maliskey
  - Saginaw Arts & Sciences Academy
- Jackson Smith
  - Davison Middle School



# 4<sup>th</sup> Award – Earth / Chemical

- \$100 Cash
- Joshua Beller
  - Davison Middle School
- Sivani Mamillapalli
  - Saginaw Arts And Sciences Academy



# 4<sup>th</sup> Award – Life Science

- \$100 Cash
- Mustafa Akhtar
  - Saginaw Arts And Sciences Academy
- Ayaan Cheema
  - Saginaw Arts And Sciences Academy
- Jordan Gaiter
  - Saginaw Arts And Sciences Academy
- Mathew Thomas
  - Saginaw Arts And Sciences Academy



# 4<sup>th</sup> Award – Physical / Engineering

- \$100 Cash
- Zakariya Alkotob
  - Genesee Academy
- Islam Niloy
  - Saginaw Arts And Sciences Academy



# 3<sup>rd</sup> Award – Earth / Chemical

• \$150 Cash

• Jacob Peterson

– Davison Middle School

– I Wet My Plants!

**I Wet My Plants!**  
By Jacob Peterson

**Problem**

Plants have evolved to get water and nutrients from the soil. However, it is not always possible for them to do so. In some cases, they may not be able to get the nutrients they need from the soil. This is where I got my idea for this project.

**Hypothesis**

I think that plants (especially) grown in pots will die if they do not get the nutrients they need from the soil. I think that plants grown in pots will die if they do not get the nutrients they need from the soil. I think that plants grown in pots will die if they do not get the nutrients they need from the soil.

**Material List**

- Two bean plants (one per pot)
- Two large plant pots (one per pot)
- 100 gram paper
- Tap water
- Popsicle sticks (one per pot)
- Potting soil
- Eight force pins
- Scissors
- Tweezers
- Tack and string (one per pot)
- Plastic baggies (one per pot)
- Salt for soil (one per pot)
- Scale

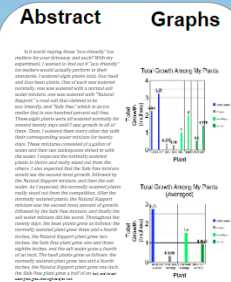
**Conclusion**

In my data, the results showed that plants grown in pots did not get the nutrients they needed from the soil. This is because the plants in pots did not get the nutrients they needed from the soil.

**Abstract**

I did this project to see if plants in pots can get the nutrients they need from the soil. I found that plants in pots do not get the nutrients they need from the soil.

**Graphs**



| Plant   | Condition 1 | Condition 2 | Condition 3 |
|---------|-------------|-------------|-------------|
| Plant 1 | 10          | 10          | 10          |
| Plant 2 | 10          | 10          | 10          |
| Plant 3 | 10          | 10          | 10          |

**Data**

| Plant   | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 | Day 10 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Plant 1 | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10     |
| Plant 2 | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10     |
| Plant 3 | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10     |

**Procedure**

1. Label your eight plants with "Control", "Water", "Salt", "Fertilizer", "Sugar", "Lemon", and "Vinegar".
2. Plant the bean seeds in pots. Plant two seeds in each pot.
3. Fill each pot with 100 grams of potting soil.
4. Water the plants with 100 grams of water each day.
5. Add the different substances to the pots.
6. Measure the growth of each plant every day.
7. Record the data in the table.
8. Calculate the average growth for each plant.

**Disy One Of Salts**  
**Day Ten of Salts**  
**Day Twenty of Salts**

Final Day

• \$150 Cash  
• 150 grams Potting Soil  
• 100 grams Water





# 3<sup>rd</sup> Award – Life Science

• \$150 Cash

- Sharmitha Bandla
  - Saginaw Arts And Sciences Academy
  - The Effects Of Perchlorate And Turmeric On *Daphnia Magna*.

### The Effects of Perchlorate and Turmeric on the Heart Rate of *Daphnia magna*

**PURPOSE**  
To measure *Daphnia magna* response to the effects of the chemical perchlorate on the heart rate of *Daphnia magna*.

**INTRODUCTION**  
*Daphnia magna* are water fleas that are found in ponds, freshwater lakes and streams. They are eight, jointed and breathe and eat the same as humans. *Daphnia magna* are used as a test organism in toxicology studies. They are easy to raise and breed. *Daphnia magna* are used as a test organism in toxicology studies. They are easy to raise and breed. *Daphnia magna* are used as a test organism in toxicology studies. They are easy to raise and breed.

**PROCEDURE**  
1. Make Perchlorate and Turmeric solutions.  
2. Take 100 µl of perchlorate with 10 ml spring water to make 1:100 perchlorate.  
3. Take 1 ml of 1:100 perchlorate solution with 9 ml spring water to make 1:1000 perchlorate.  
4. Take 1 ml of 1:1000 perchlorate solution with 9 ml of spring water to make 1:10000 perchlorate.  
5. Take 10 µg of Turmeric with 2 ml spring water to make Turmeric solution.  
6. Dissolve *Daphnia magna* from vial and transfer to dish.  
7. Place vials carefully under the microscope.  
8. Observe the legs with a magnifying glass for the beating. Count 10 beats. Do this three times. Do different *Daphnia magna* for each trial.  
9. Measure the time with three different concentrations of perchlorate. Do three trials for each concentration.  
10. Measure the time with various amounts. Do three trials.  
11. Compare the time with perchlorate and different concentrations of perchlorate solution.  
12. Repeat the experiment three times.



**CONCLUSION**  
The hypothesis was supported. Turmeric did help increase the heart rate of *Daphnia magna* after it was exposed to different concentrations of perchlorate. Perchlorate increased the heart rate of *Daphnia magna* after the control, perchlorate and Turmeric raised the heart rate of *Daphnia magna* but more slowly. Looking at the graph, the  $F_{100}$  value was less than 5.0. As the results vary significantly. Based on these results, perchlorate is not a good part of treatment of perchlorate contamination in humans and animals because it causes the heart rate to be difficult.

**MATERIALS**  
1) *Daphnia magna*  
2) Perchlorate  
3) Turmeric  
4) Spring water  
5) *Daphnia magna* vials  
6) Light microscope  
7) Pipette  
8) Turmeric powder  
9) Beakers  
10) Spring Water  
11) Perchlorate Solution

**RESULTS**  
Figure 1: Bar chart showing heart rate (beats/min) for different concentrations of perchlorate (1:100, 1:1000, 1:10000) and control. Heart rate increases with perchlorate concentration.  
Figure 2: Bar chart showing heart rate (beats/min) for different concentrations of Turmeric (10 µg, 20 µg, 40 µg) and control. Heart rate increases with Turmeric concentration.  
Figure 3: Bar chart showing heart rate (beats/min) for different concentrations of perchlorate and Turmeric. Heart rate increases with both perchlorate and Turmeric concentration.  
Figure 4: Bar chart showing heart rate (beats/min) for different concentrations of perchlorate and Turmeric. Heart rate increases with both perchlorate and Turmeric concentration.  
Figure 5: Bar chart showing heart rate (beats/min) for different concentrations of perchlorate and Turmeric. Heart rate increases with both perchlorate and Turmeric concentration.  
Figure 6: Bar chart showing heart rate (beats/min) for different concentrations of perchlorate and Turmeric. Heart rate increases with both perchlorate and Turmeric concentration.  
Figure 7: Bar chart showing heart rate (beats/min) for different concentrations of perchlorate and Turmeric. Heart rate increases with both perchlorate and Turmeric concentration.  
Figure 8: Bar chart showing heart rate (beats/min) for different concentrations of perchlorate and Turmeric. Heart rate increases with both perchlorate and Turmeric concentration.  
Figure 9: Bar chart showing heart rate (beats/min) for different concentrations of perchlorate and Turmeric. Heart rate increases with both perchlorate and Turmeric concentration.  
Figure 10: Bar chart showing heart rate (beats/min) for different concentrations of perchlorate and Turmeric. Heart rate increases with both perchlorate and Turmeric concentration.  
Figure 11: Bar chart showing heart rate (beats/min) for different concentrations of perchlorate and Turmeric. Heart rate increases with both perchlorate and Turmeric concentration.  
Figure 12: Bar chart showing heart rate (beats/min) for different concentrations of perchlorate and Turmeric. Heart rate increases with both perchlorate and Turmeric concentration.

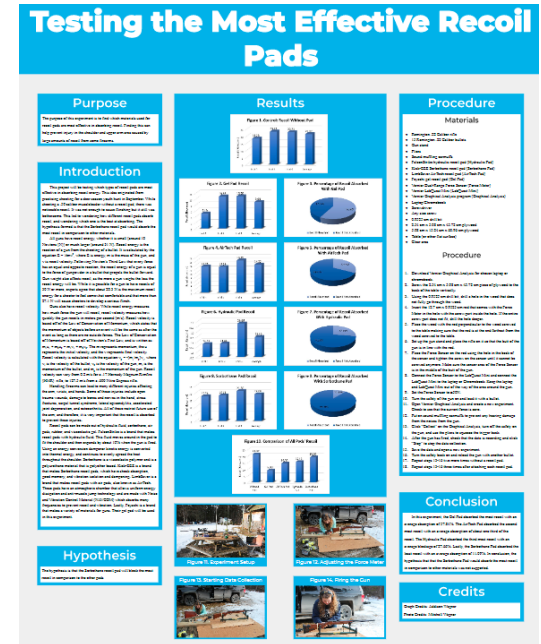
| Concentration | Heart Rate (beats/min) |
|---------------|------------------------|
| Control       | ~100                   |
| 1:100         | ~110                   |
| 1:1000        | ~120                   |
| 1:10000       | ~130                   |

| Concentration | Heart Rate (beats/min) |
|---------------|------------------------|
| Control       | ~100                   |
| 10 µg         | ~110                   |
| 20 µg         | ~120                   |
| 40 µg         | ~130                   |



# 3<sup>rd</sup> Award – Physical / Engineering

- \$150 Cash
- Addison Wagner
  - Saginaw Arts And Sciences Academy
  - Testing The Most Effective Recoil Pad Materials



# 2<sup>nd</sup> Award – Earth / Chemical

• \$200 Cash

• Hannah Ober  
 – Saginaw Arts & Sciences Academy  
 – Effects Of Vitamins On The Yeast Fermentation Process

## Effects of Vitamins on the Yeast Fermentation Process



### Introduction

- Yeast is a single-cell, plant-like organism that is part of the fungus family. The most commonly used yeast is called *Saccharomyces cerevisiae*.
- The fermentation process happens when the organism is placed into a solution that contains sugar. Then the glucose is processed by the yeast to produce carbon dioxide and alcohol.
- The fermentation process is used for baking, alcohol beverage fermentation and the production of yogurt.
- Vitamins are nutrients for yeast. They are important for enzyme structure and function.
- Vitamin B (thiamine) is used as a coenzyme in the alcoholic fermentation.
- Vitamin C (ascorbic acid) is also used for bread baking and it helps strengthen the gluten network.

### Purpose

Test two water-soluble vitamins (Vitamin B, and Vitamin C) to better understand their effect on the fermentation of yeast and determine which one speeds up the process.

### Hypothesis

Vitamin C and Vitamin B, will both speed up the yeast fermentation process.

### Materials



Ingredients

Dough mixing

### Procedure

#### a) Measure the amount of CO<sub>2</sub> produced in yeast/water formulations without vitamins

1. Build the experimental setup.
2. Weigh vitamins, grind them into powder and pour them into a flask.
3. Weigh the distilled water into the flask and swirl the solution until the powder is dissolved.
4. Weigh the sugar into the flask and swirl until dissolved.
5. Weigh the yeast then add it to the flask.
6. Cap the flask with the rubber stopper and attach the tygon tube to the air.
7. Start the timer and swirl the solution.
8. Record the time and the amount of CO<sub>2</sub> produced.
9. Repeat 3 times.

#### b) Effect of pH before/after neutralization of vitamin C

1. Dissolve vitamin C in water.
2. Add the baking soda like by the titration and test until the pH is 7 using a pH strip.
3. Follow the procedure for yeast/water formulations to measure the amount of CO<sub>2</sub> produced.

#### c) Fermentation of doughs without vitamins

1. Weigh the flour and pour it into the electronic scale.
2. Weigh vitamin, sugar, yeast and water into a bowl and mix until everything is dissolved.
3. Add the solution to the flour and mix on medium for 2 minutes. Add 5g flour to the mix on high for 2 minutes.
4. Then change the beater for a hook, add the rest of the flour and mix on medium for 45 minutes.
5. Put 100g of dough in each of the 3 glasses and position a ruler by the glasses. Use camera to take pictures every minute.



6. Bake the dough in the oven at 400 °F for 30 minutes in a muffin pan and compare how the bread looks with and without vitamins.

### Data

Figure 1. Test runs for control formulation

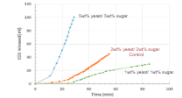


Table 1. Formulations

| Ingredient      | Yeast/Control | Vitamin B | Vitamin C | Control | Vitamin B | Vitamin C |
|-----------------|---------------|-----------|-----------|---------|-----------|-----------|
| Yeast (g)       | 2             | 2         | 2         | 2       | 2         | 2         |
| Sugar (g)       | 2             | 2         | 2         | 2       | 2         | 2         |
| Water (ml)      | 40            | 40        | 40        | 40      | 40        | 40        |
| Vitamin B (mg)  | 0             | 0         | 0         | 0       | 0         | 0         |
| Vitamin C (mg)  | 0             | 0         | 0         | 0       | 0         | 0         |
| Total Flour (g) | 0             | 0         | 0         | 0       | 0         | 0         |

Figure 2. Fermentation of formulations without vitamins

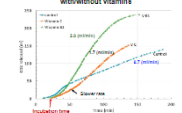


Figure 3. pH effects on yeast fermentation process

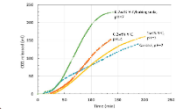


Figure 4. Fermentation of doughs without vitamins

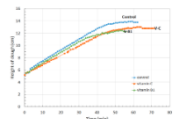


Figure 5. Doughs without vitamins after baking



### Results

The hypothesis (Vitamin B, and Vitamin C can speed up the fermentation of yeast) was supported.

### Conclusion

- 20% of yeast and 20% of sugar were selected as the control formulation.
- At the very beginning, the incubation time of the yeast/water formulations with Vitamin B, or Vitamin C was slightly longer than the control formulation and the fermentation rate of Vitamin C was slower. However, the formulations with Vitamin B, or Vitamin C both had faster fermentation rates at a later stage.
- pH had a significant effect on the yeast fermentation process. Lower pH slowed down the fermentation rate. Neutralization to pH 7 greatly sped it up.
- The dough formulations with vitamins had a slightly slower growth rate than the control. The bread with vitamins grew higher and had a better texture than the control.



# 2<sup>nd</sup> Award – Life Science

- \$200 Cash
- Madelyn Flynn
  - Davison Middle School
  - Surviving The Surge

## Surviving the Surge

**Problem**

In Michigan's history the Great Lakes water levels are at the highest they have ever been. Meaning that more homes are getting destroyed due to flooding and beach erosion.

**Hypothesis**

My hypothesis is that if the area uses a defense with a curve it would redirect the water away. Keeping it out of the collection area.

**Procedure**

1. Glue all 5 pievlglass sheets together
2. Glue 10x5 2 inches from a back wall and 1, 10x4, 2 inches from the first
3. Using the cement make the defenses
4. Make rock armor by closing rocks in wire
5. Cut cardboard 2 inches wide and 10 inches tall then form this into a triangle
6. Pour cement into the triangle. this will be your beach
7. Pour water into the tank
8. Place defenses on the wall
9. Cut a charging cable so that the wires are exposed
10. Splice the wires into the parts of the motor and speed controller
11. Attach the wheel to the motor
12. Use pliers to curve both ends of the rod, drill a screw three the curve into the wheel
13. With the opposite end of the rod drill a screw three the curve and into glass that is 10x14 to make the paddle.
14. Put the wave maker in a box, make a rectangle hole for the rod
15. Place box on the opposite side of your defense
16. Plug in the wave maker, turn it on
17. Set the speed to 75%
18. After 20 seconds turn off the wave maker
19. Measure the water in the tank, use a siphon pump to measure the water back into a beaker
20. For a control repeat steps 1-20, no defenses

**Abstract**

This year the Great Lakes water levels were the highest in recorded history. Meaning that more homes are getting damaged due to flooding and beach erosion. I had a hypothesis that if you use curved defenses it will reduce the amount of flooding. To test this I had made a mechanical wave tank and tested 7 defenses. My results were that the recurve step wall had an average 0 mL of water, the recurve with 3.60 mL, the rock armor had 66.66 mL, the block with 291.66 mL, the dike with 343.33 mL, then the mid-break water with 389.66 mL and finally the worst was the control with 1200.66 mL of water. In the end the curved defenses had proven superior to those that did not have a curve.

**Figure: A Comparison of 7 Defenses Repeated 3 Times**

| Types of Defenses | First trial | Second trial | Third trial |
|-------------------|-------------|--------------|-------------|
| Control           | 1200.66     | 1200.66      | 1200.66     |
| Block             | 291.66      | 291.66       | 291.66      |
| Dike              | 343.33      | 343.33       | 343.33      |
| Recurve Step Wall | 0.00        | 0.00         | 0.00        |
| Mid Break Water   | 389.66      | 389.66       | 389.66      |
| Recurve Wall      | 3.60        | 3.60         | 3.60        |
| Rock Armor        | 66.66       | 66.66        | 66.66       |

**Table: Types of Defenses**

| Types of Defenses | Trial 1 | Trial 2 | Trial 3 |
|-------------------|---------|---------|---------|
| Recurve Step Wall | 0       | 0       | 0       |
| Recurve Wall      | 3       | 3       | 3       |
| Rock Armor        | 65      | 65      | 50      |
| Block             | 270     | 285     | 290     |
| Dike              | 355     | 315     | 360     |
| Mid Break Water   | 384     | 425     | 390     |
| Control           | 1200    | 1245    | 1220    |

**Conclusion**

From my experiment I had concluded that the recurve step wall and the recurve wall were the two superior defenses. I had found that the most successful defenses are built with a curve. The reason why they had outperformed the others was because they could redirect the water away from the collection area. Meanwhile, the worst defense was the farthest underwater. Meaning that it had less success of breaking up or moving the waves away.

# 2<sup>nd</sup> Award – Physical / Engineering

- \$200 Cash

- Andrew Shorkey

- Davison Middle School
- Ultra Violet Ultraviolet

### Ultra Violet Ultraviolet

LUKE SHORKEY  
DAVISON MIDDLE SCHOOL

**Problem**  
What is the effect of UV light on the growth of bacteria? Can UV light be used to kill bacteria? How long does it take to kill bacteria? How much UV light is needed to kill bacteria?

**Hypothesis**  
I think the UV light will kill the bacteria. I think the UV light will kill the bacteria. I think the UV light will kill the bacteria. I think the UV light will kill the bacteria.


**Variables**  
Independent: UV light intensity  
Dependent: Amount of bacteria growth  
Control: The amount of time the bacteria is exposed to the light

**Procedure**  
1. Prepare the UV light source.  
2. Prepare the bacterial culture.  
3. Prepare the control culture.  
4. Prepare the UV light source.  
5. Prepare the bacterial culture.  
6. Prepare the control culture.  
7. Prepare the UV light source.  
8. Prepare the bacterial culture.  
9. Prepare the control culture.

**Data Analysis**  
To analyze the data, I will use a line graph. I will plot the amount of bacteria growth on the y-axis and the amount of UV light on the x-axis. I will compare the amount of bacteria growth in the UV light group to the amount of bacteria growth in the control group.

**Results**  
The amount of bacteria growth in the UV light group was significantly lower than the amount of bacteria growth in the control group. This indicates that UV light can be used to kill bacteria.

**Conclusion**  
In conclusion, the amount of bacteria growth in the UV light group was significantly lower than the amount of bacteria growth in the control group. This indicates that UV light can be used to kill bacteria.



# 1<sup>st</sup> Award – Life Science

- \$250 Cash
- Mohamad Jafari
  - Genesee Academy
  - Getting Sick Might Be In Your Hands

**GETTING SICK MIGHT BE IN YOUR HANDS**  
Where and when do kids get the most germs on their hands?

**PURPOSE**  
The purpose of this experiment is to determine which time of day has the most germs on hands. The purpose of this experiment is to determine which time of day has the most germs on hands. The purpose of this experiment is to determine which time of day has the most germs on hands.

**QUESTION**  
Which time of day has the most germs on hands?

**CONCLUSION**  
The conclusion of this experiment is that the most germs are found on hands in the morning.

**HYPOTHESIS**  
The hypothesis of this experiment is that the most germs are found on hands in the morning.

**BACKGROUND**  
The background of this experiment is that germs are found on hands throughout the day.

**PROCEDURE**  
The procedure of this experiment is to collect samples of germs on hands at different times of the day.

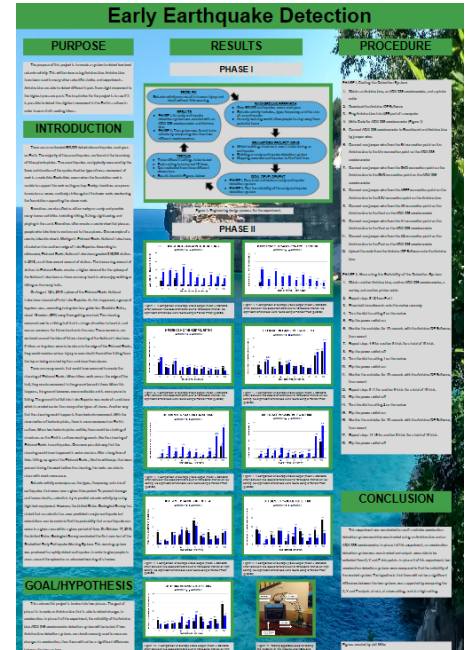
**RESULTS**  
The results of this experiment show that the most germs are found on hands in the morning.

| Time of Day | Number of Germs |
|-------------|-----------------|
| Morning     | 150             |
| Afternoon   | 100             |
| Evening     | 50              |



# 1<sup>st</sup> Award – Physical / Engineering

- \$250 Cash
- Jett Miller
  - Saginaw Arts & Sciences Academy
  - Early Earthquake Detection





# Grand Award + 1<sup>st</sup> Award – Earth / Chemical

- \$350 Cash

- Matlyn Miller
  - Saginaw Arts & Sciences Academy
  - Reducing The Carbon Footprint

## REDUCING THE CARBON FOOTPRINT

### PURPOSE

The purpose of this experiment is to determine the effect of different carbon dioxide concentrations on the rate of photosynthesis in a plant. The experiment will be conducted in a controlled environment to ensure accurate results.

### INTRODUCTION

The following hypothesis was made for this experiment: As the concentration of carbon dioxide increases, the rate of photosynthesis will also increase. This is because carbon dioxide is a reactant in the process of photosynthesis, and a higher concentration will lead to a faster rate of reaction. The experiment will be conducted in a controlled environment to ensure accurate results.

### HYPOTHESIS

The hypothesis of this experiment is that as the concentration of carbon dioxide increases, the rate of photosynthesis will also increase. This is because carbon dioxide is a reactant in the process of photosynthesis, and a higher concentration will lead to a faster rate of reaction.

### RESULTS

| Trial | Control | 10% | 20% |
|-------|---------|-----|-----|
| 1     | 10      | 20  | 30  |
| 2     | 20      | 40  | 60  |
| 3     | 30      | 60  | 90  |

### PROCEDURE

1. Obtain a PVC pipe and a plastic bag and cut the PVC pipe into 3 equal pieces.
2. Fill the PVC pipe with 100 mL of water and add 10 mL of 1M NaOH solution.
3. Add 10 mL of 1M NaOH solution to the PVC pipe.
4. Add 10 mL of water to the PVC pipe.
5. Add 10 mL of water to the PVC pipe.
6. Add 10 mL of water to the PVC pipe.
7. Add 10 mL of water to the PVC pipe.
8. Add 10 mL of water to the PVC pipe.
9. Add 10 mL of water to the PVC pipe.
10. Add 10 mL of water to the PVC pipe.

### CONCLUSION

The results of this experiment show that as the concentration of carbon dioxide increases, the rate of photosynthesis also increases. This is because carbon dioxide is a reactant in the process of photosynthesis, and a higher concentration will lead to a faster rate of reaction.







# Thank You

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