

The 44th Annual Ohio Junior Science & Humanities Symposium

March 21-23, 2007



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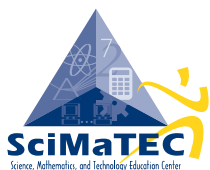
www.ojshs.org



- 1** Bancroft Campus (Main Campus)
- 2** Scott Park Campus
- 3** Stranahan Arboretum
- 4** SeaGate Campus
- 5** Museum of Art Campus
Center for the Visual Arts
- 6** Lake Erie Research Center
- ★ Clarion Hotel Westgate, Secor Road

table of contents

2007 Ohio JSHS Schedule “At A Glance”	3-4
General Information for the 2007 Ohio JSHS	5
2007 Ohio JSHS Schedule for March 21-23, 2007	7-12
Paper Presenters’ Abstracts	13-22
Poster Presenters	23-24
Judges’ Score Sheet	
Paper Presenters	25
Poster Presenters	26
2006 Ohio JSHS Awardees	27-30
2007 Ohio JSHS Awards	31-33
Acknowledgments / Judging Teams	34-35
2007 Advisory Board	36
History of the Junior Science and Humanities Symposium	37
Cumulative Awards	
American Nuclear Society Award	37
Thomas Alva Edison Award	38
The Colonel George F. Leist Distinguished Teacher Award	39
Ohio JSHS Presenters to the National JSHS	40
Ohio JSHS Winners of Outstanding Poster Presentation	41-43



2006 Ohio JSHS award winners



Front Row (L to R)
Kurt Feng, Madhav Chopra,
James Wang, Emilio Duran,
Saumitra Thakur

Back Row (L to R)
Kara Riggs, Wang Pan,
Daniel Litt, Amy Lui



2006 Ohio JSHS Participants

schedule “at a glance”

2007 Ohio Junior Science and Humanities Symposium March 21-23, 2007

Wednesday, March 21

4:00 p.m.-5:45 p.m.	Check in at Clarion Hotel Westgate, Secor Road, Toledo
6:00 p.m.	Mandatory Meeting for ALL Participants, Wedgewood Room
7:00 p.m.	Board Buses to University of Toledo Recreational Center
7:30 p.m.-10:15 p.m.	Pizza Dinner / Recreational Activities, Maple Room
10:15 p.m.	Board Buses for return to Clarion Hotel Westgate

Thursday, March 22

7:30 a.m.-8:20 a.m.	Breakfast, Clarion Hotel Westgate, Atrium
8:30 a.m.	Board Buses to University of Toledo
9:10 a.m.	Opening Session, Student Union, Room 2584
9:30 a.m.-10:50 a.m.	First Paper Session / Poster set-up: Group 1, Student Union 2592
Break	
11:10 a.m.-12:10 p.m.	Second Paper Session / Poster set-up: Group 2, Student Union 2592
12:15 p.m.-1:30 p.m.	Luncheon, International House
1:30 p.m.-2:30 p.m.	Third Paper Session
Break	
2:50 p.m.-3:50 p.m.	Fourth Paper Session
2:00 p.m.-3:30 p.m.	Poster Judging, Poster Presenters, Student Union, 2592
4:00 p.m.-4:30 p.m.	Poster Viewing, All participants, Student Union, 2592
4:45 p.m.	Board Buses to Clarion Hotel Westgate
6:30 p.m.-8:30 p.m.	Ohio JSHS Annual Banquet, Ballrooms 1 and 2, Clarion Hotel Westgate
9:00 p.m.-11:00 p.m.	Planned Activities / Open Activities / Pool Atrium, Hospitality Room 1116 Adult Reception, Room 3399

schedule “at a glance”

Friday, March 23

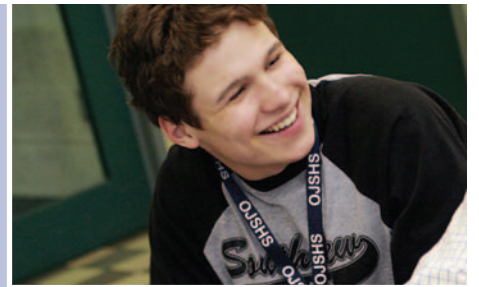
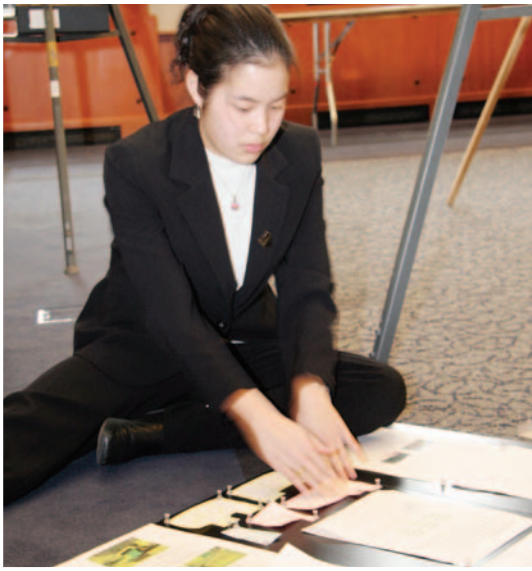
7:30 a.m.-8:20 a.m.	Room Checkout / Breakfast, Atrium
8:45 a.m.	Board Buses to University of Toledo
9:25 a.m.	Announcements, Student Union, 2584
9:30 a.m.-10:30 a.m.	Fifth Paper Session
Break	
10:50 a.m.-11:50 a.m.	Sixth Paper Session
12:00 p.m.	Luncheon, Student Union Judges Luncheon, Student Union, 2562 Advisory Board Luncheon, Student Union, 2579 Student Advisory Board Luncheon, Student Union, 2592
1:25 p.m.	Group Photograph, Student Union, 2584, Lobby
1:45 p.m.	Toledo Zoo Presentation, Student Union, 2584
2:30 p.m.	Awards Ceremony, Student Union, 2584
3:05 p.m.	Adjournment / Board Buses to the Clarion Hotel



general information

2007 Ohio Junior Science and Humanities Symposium

- Place:** Clarion Hotel Westgate, Toledo, Student Union, University of Toledo
- Time:** Registration begins at 4:00 p.m., Wednesday, March 21, 2007. The program ends at approximately 3:00 p.m., Friday, March 23, 2007. *Please plan to stay for the entire program.*
- Fees:** There will be a registration fee of \$30 for each student delegate (non-presenting student). For all students presenting papers and posters, the \$30 registration fee will be paid by the Symposium. This fee will go into the general operating fund and will pay for a small percentage of the costs incurred to run the program. The students are not expected to pay the \$30 themselves. Students should solicit a local sponsor, such as the Kiwanis or the Rotary Club, to help pay the fee.
- Room & Meals:** Wednesday and Thursday evening room costs and meals for all participants (student delegates, student presenters, and teachers) attending the Ohio JSHS are paid by the Symposium. Accompanying guests will need to pay for their hotel rooms and meals.
- Money:** Students may desire to have some extra money for other items at the students' discretion.
- Dress:** Everyone is expected to dress appropriately for the Symposium. Bring sports wear for the UT Recreation Center and for swimming at the hotel. A banquet will be held on Thursday evening, so please be prepared to dress appropriately for this special occasion.
- Paper & Poster Sessions:** Students are expected to attend **all** paper and poster sessions presented during the Symposium. The success of the Symposium rests upon the desire to participate. Judging committees will select the winners. These winners will be announced at the Awards Ceremony on Friday.
- Conduct:** The purpose of the Symposium is to learn about the scientific process, and to meet and visit with new students interested in science. Proper behavior is requested during the Symposium and in the Clarion Hotel. Stay with a friend or chaperone at all times. Please avoid disturbing your colleagues and others.



schedule of events

2007 Ohio Junior Science and Humanities Symposium

Wednesday, March 21

- 4:00 p.m.–5:45 p.m. Check in at Clarion Hotel Westgate (Clarion Lobby)
- 6:00 p.m.–6:45 p.m. Mandatory General Meeting for ALL Participants
(Clarion Hotel Westgate, Wedgewood Room)
- 7:00 p.m. Board Buses to University of Toledo Recreational Center
- 7:30 p.m. - 10:15 p.m. Pizza Dinner / Games / Open Recreational Activities
- 10:15 p.m. Board Buses for Return to Clarion Hotel Westgate

Thursday, March 22

- 7:30 a.m.–8:20 a.m. Breakfast, Atrium, Clarion Hotel Westgate
- 8:30 a.m. Board Buses to The University of Toledo
- 9:10 a.m. Opening Session, The University of Toledo, Student Union, Room 2584

Presentation of Colors: **Color Guard, Pershing Rifles, Troop L1,
The University of Toledo**

Welcome: **Dr. Emilio Duran**, Director, Ohio JSHS, Assistant Professor,
Department of Biological Sciences, The University of Toledo

Welcome: **Major Brandee Lockard**, U.S. Army, Professor, Military
Science, The University of Toledo

Announcements: **Ms. Iris Szelagowski**, Ohio JSHS Coordinator



schedule of events

2007 Ohio Junior Science and Humanities Symposium

First Paper Session

The University of Toledo, Student Union, Room 2584

**Session Chairperson: Ms. Connie Hubbard, Science Research and Chemistry Teacher,
North Canton Hoover High School**

- 9:30 a.m. “A Mathematical Analysis of Gait Motion for Rotationplasty Patients through Stereophotogrammetry”
Emily Towers, Lakota West High School
- 9:50 a.m. “The Effects of a Mobile Tracking System on the Solar-Powered Parabolic Water Purification Unit”
Victoria Ellis, Sylvania Southview High School
- 10:10 a.m. “The Effect of Radiation Pressure on Possible Solar Sail Materials”
Yü Lin Lin Huang, Pettisville High School
- 10:30 a.m. “Antifungal Drug Binding Sites on the SUV-3 Protein”
Mara Wilber, Gilmour Academy
- 10:50 a.m. Break and announcements

Second Paper Session

The University of Toledo, Student Union, Room 2584

Session Chairperson: Mr. Lewis Blevins, Graduate Student, The University of Toledo

- 11:10 a.m. “The Effects of Implemented Fluid Dynamics on the Concentration of Environmental Smoke in an Enclosed Atmosphere”
Jason Piller, Sylvania Southview High School
- 11:30 a.m. “Comparing the Effectiveness of Levees, Dams, and Wetlands as Flood Control Systems”
James Baatz, Pettisville High School

schedule of events

2007 Ohio Junior Science and Humanities Symposium

- 11:50 a.m. “The Effect of Benzodiazepine Withdrawal on Hippocampal CA1 Neuron CAMKII Levels”
Maxwell Zorick, Sylvania Southview High School
- 12:15 p.m.-1:30 p.m. Luncheon, International House, The University of Toledo

Third Paper Session

The University of Toledo, Student Union, Room 2584

Session Chairperson: Mr. Jake Burgoon, Graduate Student, The University of Toledo

- 1:30 p.m. “The Effect of Intelligence Profile on Response to Persuasion”
Saumitra Thakur, Sylvania Southview High School
- 1:50 p.m. “Using a Modified Elliptical Device to Direct Light from One Focus to Another”
Ethan Hall, North Canton Hoover High School
- 2:10 p.m. “The Effect of Herbal Extracts on the Selective Activation of Muscarinic Acetylcholine Receptors”
Jiayun Lu, Sylvania Southview High School
- 2:30 p.m. Break and announcements

Fourth Paper Session

The University of Toledo, Student Union, Room 2584

Session Chairperson: Ms. Donna Meller, High School Science Teacher, Pettisville Local Schools

- 2:50 p.m. “Harnessing Decomposition for Electrical Energy”
Ruth Chang, Sylvania Southview High School
- 3:10 p.m. “The Relationship of Drag and Velocity”
Victoria Edinger, Dayton Christian High School

schedule of events

2007 Ohio Junior Science and Humanities Symposium

- 3:30 p.m. “The Effect of Drugs that Bind to Estrogen Receptors on Phenotype
in Developing Apterous *Drosophila Melanogaster*”
Elizabeth Engoren, Sylvania Southview High School
- 2:00 p.m.-3:30 p.m. **Poster Judging**, Poster Presenters, Student Union, 2592
- 4:00 p.m.- 4:30 p.m. **Poster Viewing**, All Participants, Student Union, 2592
- 4:45 p.m. Board Buses to Clarion Hotel Westgate
- 6:30 p.m.-8:30 p.m. **Ohio JSHS Annual Banquet**
Ballrooms 1 and 2, Clarion Hotel Westgate

Welcome: **Ms. Iris Szelagowski**, Ohio JSHS Coordinator
- 9:00 p.m.-11:00 p.m. Planned Activities / Open Activities for Students / Pool
Atrium, Hospitality Room, 1116

Adult Reception, Room 3399



schedule of events

2007 Ohio Junior Science and Humanities Symposium

Friday, March 23

- 7:30 a.m.-8:20 a.m. Room Checkout; Breakfast, Atrium
8:45 a.m. Board Buses for The University of Toledo
9:25 a.m. Announcements, The University of Toledo, Student Union, Room 2584

Fifth Paper Session

The University of Toledo, Student Union, Room 2584

**Session Chairperson: Ms. Penny Cobau, Science Research Teacher,
Sylvania Southview High School**

- 9:30 a.m. “Fabrication of Nanoparticles for Diagnosis and Therapy of Tumors”
Aaditya Shidham, Upper Arlington High School
- 9:50 a.m. “A Comparative Study of the Effectiveness of Various Forms of *Allium sativum* and Antibiotics on Bacteria”
Rebekah A. Meller, Pettisville High School
- 10:10 a.m. “An Analysis of the Wetting Properties of Electrospun Polycaprolactone and Tecophilic”
Madhav Chopra, North Canton Hoover High School
- 10:30 a.m. Break and Announcements



schedule of events

2007 Ohio Junior Science and Humanities Symposium

Sixth Paper Session

The University of Toledo, Student Union, Room 2584

Session Chairperson: Ann Burkam, Science Teacher, Buckeye Valley Middle School

- 10:50 a.m. “The Antimicrobial Activity of Cashew Nut Shell Liquid Against *Saccharomyces cerevisiae*, *Pseudomonas aeruginosa*, and *Leuconostic mesenteroid*”
Yifei Feng, Sylvania Southview High School
- 11:10 a.m. “Developing a Nanofiber Filter to Eliminate Copper Ions from Water”
Jyotiraditya Sinha, North Canton Hoover High School
- 11:30 a.m. “A Novel Role for the CCAAT/Enhancer-Binding Protein α in the Activation of New Target Promoters by Androgen”
Vivek Ratnam, Sylvania Southview High School
- 12:00 p.m. Lunch, The University of Toledo, Student Union

Judges Luncheon, Judges Meet to Choose Paper Finalists,
Student Union, Room 2562

Advisory Board Meeting and Luncheon,
Student Union, Room 2579

Student Advisory Board Meeting and Luncheon
Student Union, Room 2592
- 1:25 p.m. Group Photograph, Student Union, Lobby outside of Room 2484
- 1:45 p.m. Toledo Zoo Presentation, Student Union, Room 2584
- 2:30 p.m. Awards Ceremony, Student Union, Room 2584
Ms. Iris Szelagowski, Ohio JSHS Coordinator
- 3:00 p.m. Complete Evaluation Forms
Return Food Service Rocket Cards
- 3:05 p.m. Adjournment / Board Buses to Clarion Hotel Westgate

paper presentations

2007 Ohio Junior Science and Humanities Symposium

James Baatz – Pettisville High School

“Comparing the Effectiveness of Levees, Dams, and Wetlands as Flood Control Systems”

Abstract

The purpose of this study is to compare the effectiveness of wetlands, levees, and dams as flood control systems. To test each flood control system, a model river basin was made of plaster of Paris in a foil pan. Then a model was made of each a wetland, a levee, and a dam to control floodwaters. Rain was simulated and the flood height was measured at each of six points. The hypothesis was that the wetland would be most effective because it could retain water the best. This was proven correct when the wetland reduced floods the most. The dam system and the levee system were not as effective in reducing the flood heights. This study is applicable to everyday life because of the importance in controlling floods to protect buildings and farms near bodies of water. This study suggests that wetlands are the most effective in reducing floods. They are also more economical than expensive levee and dam systems.

Ruth Chang – Sylvania Southview High School

“Harnessing Decomposition for Electrical Energy”

Abstract

Hydrogen has been deemed as one of the future energy sources; hydrogen, however, is not easily derived. The use of bio-energy to obtain electricity could provide a way for inexpensive power which could derive hydrogen as a more flexible and universal fuel. This project explored the concepts of bio-energy and its principles in decomposition and the release of energy. After successfully producing and confirming a bio-battery made from water and soil, the battery was tested for an increased efficiency by adding additional oxygen by algae’s photosynthesis. This addition of algae accounted for a significant increase in voltage during the day when it received sun exposure, and the decrease during the night. This is because oxygen is a strong electron acceptor that pulled electrons out of the electrodes; thus increasing oxygen increased the speed and quantity of electron flow, which led to a greater voltage.

paper presentations

2007 Ohio Junior Science and Humanities Symposium

Madhav Chopra – North Canton Hoover High School

“An Analysis of the Wetting Properties of Electrospun Polycaprolactone and Tecophilic”

Abstract

Nanotechnology’s potential contribution to the field of medicine can be a breakthrough bandage that does not have the limitations of an old-fashioned gauze sticking to an open wound. The main purpose of this experiment is to create a potential material that can be applied onto the nanofiber bandages as a non-wetting barrier to the wound. Polycaprolactone (PCL) and tecophilic are electrospun in order to create a hydrophobic surface that can be safely applied onto the nanofiber bandage. Polycaprolactone is used because it is a biodegradable polymer that is widely used in the medical field. Likewise, tecophilic is an ideal polymer to use because it is also used in the medical field and can be doped with antibacterial chemicals such as nitric oxide. It is hypothesized that as one increases the gap distance of the electrospinning apparatus, the diameter of the nanofibers will decrease, which will result in a hydrophobic nanofiber mat. The data supported the hypothesis; there is an optimal range in the gap distance where the nanofibers had the largest degree of hydrophobicity.

Victoria Edinger – Dayton Christian High School

“The Relationship of Drag and Velocity”

Abstract

The purpose of this experiment was to test the relationship between drag and velocity. The hypothesis was that for a given velocity, the amount of drag generated will increase parabolically with increasing angle of attack (Drag polar: $C_D = f(C_L^2)$, and for a given airfoil over a comparative angle of attack range, the rate increase in drag will be reduced at a higher velocity due to the increase of induced drag ($Re = f(v)$). A subsonic airfoil model was constructed, and tests were run in a wind tunnel at velocities of 20 ft./s, 40 ft./s, and 49 ft./s for a set range of angles of attack. An increase of drag was seen: at the -6° the airfoil generated .061 Newtons of drag, at the 4° the airfoil generated .111 Newtons of drag. A decrease in the rate of drag increase was seen. From -6° to 2° at the velocity of 20 ft./s the drag increased 61%. Similarly, at the velocity of 40 ft./s the drag increased 26%, and at 49 ft./s the drag increased 17%, which was due to more increased drag at higher velocities.

paper presentations

2007 Ohio Junior Science and Humanities Symposium

Victoria Ellis – Sylvania Southview High School

“The Effects of a Mobile Tracking System on the Solar-Powered Parabolic Water Purification Unit”

Abstract

Water purification has become an increasing issue as the human population has exploded in recent years, leading to a shortage of fresh water. One invention that came about to face this problem was the solar-powered water purification model. This model was later modified with a parabolic trough to concentrate sunlight onto the water and increase water evaporation. The purpose of this project was to develop a tracking system for the parabolic trough as it must retain a perpendicular alignment to the sun to retain its focal point values. The hypothesis was that a mobile trough with a tracking system would yield higher evaporation rates than that of a stationary trough. To test this, a hinging system and tracking apparatus were designed and tested for the trough. The mobile parabolic trough did yield a significantly higher amount of evaporated water, supporting the hypothesis. A model such as this could be used in areas such as under-developed areas of the Middle East that lack the means by which to purify adequate amounts of water.

Elizabeth Engoren – Sylvania Southview High School

“The Effect of Drugs that Bind to Estrogen Receptors on Phenotype in Developing Apterous *Drosophila melanogaster*”

Abstract

Various studies have concluded that different chemicals, including estrogens, estrogen blockers, and estrogen disrupters, affect sex ratios and successful mating in various species of animals that share the same evolutionary background as humans. Understanding how chemicals that bind to estrogen receptors affect these animals is imperative to understand how these chemicals may affect humans. The purpose of this project was to determine the effects of conjugated estrogens, di-ethyl phthalate, Glycine max, and raloxifene at both 10 parts per billion (ppb) and 1,000 ppb individually and in combination on developing apterous *D. melanogaster*. The hypothesis that the sex of developing apterous *D. melanogaster* would be affected by introducing into their environment various chemicals that bind to estrogen receptors was supported.

paper presentations

2007 Ohio Junior Science and Humanities Symposium

Yifei Feng – Sylvania Southview High School

“The Antimicrobial Activity of Cashew Nut Shell Liquid Against *Saccharomyces cerevisiae*, *Pseudomonas aeruginosa*, and *Leuconostic mesenteroid*”

Abstract

The goal of this project was to investigate the antimicrobial activity of cashew nut shell liquid (CNSL) against yeast, gram-positive bacteria, and gram-negative bacteria. The main component of CNSL, anacardic acid, has previously shown antibiofouling properties when polymerized. Biofouling is an accumulation of microorganisms, caused by the formation of biofilms. Investigating the antibiotic effect of anacardic acid in the monomer form, using CNSL, will show if it is capable of reducing biofilm by killing off individual cells. The hypothesis was that CNSL will inhibit *Pseudomonas aeruginosa* less than it will the other two microbes, since gram-negative bacteria have an extra outer barrier, the LPS membrane. So far, results have not supported the hypothesis. CNSL inhibited *Pseudomonas* 71% at the highest concentration tested, while *Saccharomyces* yielded a decrease of 85% with a higher concentration of CNSL.

Ethan Hall – North Canton Hoover High School

“Using a Modified Elliptical Device to Direct Light from One Focus to Another”

Abstract

The purpose of this project is to find a way to collect the most amperage from an emitter by a photocell. Since light is emitted on three axes, it is hard to efficiently collect. AutoCAD was used to create 3D drawings of an elliptical shape. A laser was used to determine the possible path light would travel if emitted from the plane the focus intercepted. A Maglite™ “super bright” bulb was then used to emit light in the ellipse and the amount of amperage and voltage transformed by the photocell at the end of the ellipse was recorded. The source was changed 1cm at a time and the data was recorded. Then the amounts were recorded without the ellipse. There was a difference of ~10.786W times the amount of light collected with the ellipse then without the ellipse. Using a level of .001, the t test showed the data to be extremely significant. The results showed that using an ellipse will greatly increase the amount of light collected.

paper presentations

2007 Ohio Junior Science and Humanities Symposium

Yü Lin Lin Huang – Pettisville High School

“The Effect of Radiation Pressure on Possible Solar Sail Materials”

Abstract

The object of this project was to determine the effect of radiation pressure on possible solar sail materials—plain paper, aluminum foil, and gold foil. Solar sailing manipulates the effect of radiation pressure on its membrane-like ‘sail’ materials. The hypothesis is that out of the three materials being tested, radiation would have the most pressure on aluminum foil. The experimental procedure requires the handling of a vacuum chamber and vacuum pump. To perform the experiment, an apparatus structure is first built. Next, the material is hung over the hypodermic needle. The lid of the chamber is placed on top with fourteen clamps to seal the chamber, and it’s vacuumed out. A 75-watt light is placed inside the chamber representing the sun. After ten minutes, the light is turned off and amount of movement is recorded. The conclusion is that radiation has the most force on aluminum foil, so the hypothesis is proven correct.

Jiayun Lu – Sylvania Southview High School

“The Effect of Herbal Extracts on the Selective Activation of Muscarinic Acetylcholine Receptors”

Abstract

Alzheimer’s disease (AD) affects approximately one-tenth of the population over 65. The development of a selective muscarinic acetylcholine agonist could reduce the symptoms of AD. The purpose of this project was to investigate the effect *Melissa officinalis* and *Withania somnifera* had on the selective activation of muscarinic receptors, in the presence and absence of a known muscarinic agonist. The hypothesis was that the two extracts would be selective M1 agonists and have a synergistic interaction with other agonists. Serial dilutions of these drugs were exposed to cells for one hour, and activity was quantified using YSi-SPA beads. Data showed no significant difference between the activations of the receptors, meaning no selective activation. It did, however, show a significant difference between the two compounds used. The addition of carbachol to extracts decreased the overall agonist activity at each receptor, suggesting the two agonists competed for receptor activation, which does not support the second hypothesis. Studies are ongoing.

paper presentations

2007 Ohio Junior Science and Humanities Symposium

Rebekah A. Meller, – Pettisville High School

“A Comparative Study of the Effectiveness of Various Forms of *Allium sativum* and Antibiotics on Bacteria”

Abstract

The purpose of this experiment was to compare the effectiveness of fresh, cooked, and supplemental garlic in inhibiting *Escherichia coli* and *Bacillus subtilis*; to determine if these forms of garlic were as effective as ampicillin and erythromycin; and if a synergistic effect would be exhibited. Fresh garlic would be more effective than cooked or supplemental. Fresh garlic would be more effective than both antibiotics and there would be a synergistic effect with fresh garlic. Cooked and supplemental garlic would not have a significant synergistic effect. Half the plates were inoculated with *E. coli*, and the other half with *B. subtilis*. Sterile disks soaked with distilled water, fresh, cooked or supplemental garlic, ampicillin, erythromycin, or ampicillin or erythromycin disks soaked with a form of garlic were placed in a quadrant. Each quadrant represented one trial with eighteen trials conducted. Fresh garlic had a greater affect on bacteria than both cooked and supplemental. Fresh and cooked garlic inhibited *E. coli* and *B. subtilis* more than both antibiotics. On *B. subtilis* there was a synergistic effect with fresh and cooked garlic with both antibiotics and garlic supplements with erythromycin only. On *E. coli* there was a synergistic effect with fresh garlic with ampicillin, and cooked garlic with both antibiotics.

Jason Piller – Sylvania Southview High School

“The Effects of Implemented Fluid Dynamics on the Concentration of Environmental Smoke in an Enclosed Atmosphere”

Abstract

Over a fifth of the world continues to smoke despite the negative health effects. Little effort is given to protecting the non-smokers in public places, and smoking bans can hurt private businesses. The purpose of this experiment was to determine if it is possible to reduce the levels of environmental smoke in a non-smoking area of an enclosed area to nearly nonexistent levels using fluid dynamics. With the use of a low-pressure airflow system using fans and air vents to extract smoke from the enclosed area, it was believed smoke levels would be nearly zero. The hypothesis was supported and the data was statically significant (p-value < .05). The optimal condition allowed no smoke to enter into the non-smoking area of the smoking chamber.

paper presentations

2007 Ohio Junior Science and Humanities Symposium

Vivek Ratnam – Sylvania Southview High School

“A Novel Role for the CCAAT/Enhancer-Binding Protein α in the Activation of New Target Promoters by Androgen”

Abstract

The CCAAT/enhancer-binding protein type α (C/EBP α) is a basic/leucine zipper transcription factor that also binds to cell cycle regulatory proteins in the cytosol to inhibit cell growth. C/EBP α reportedly supports the growth of many prostate cancer cell lines where it has lost its cytosolic inhibitory interactions. The androgen receptor (AR) functions primarily as a transcription factor that is required for development and differentiation of the prostate and the growth of prostate cancer. However, C/EBP α binds to AR and inhibits activation of its classical target genes. To address this apparent paradox, it was hypothesized that the association of C/EBP α with AR can lead to activation of target gene promoters of C/EBP α by androgen as a possible means of compensating for the inhibition of classical AR target genes. In LNCaP cells, both an artificial minimal promoter containing CCAAT elements and the natural Nkx3.1 gene promoter were activated by androgen in a manner that was enhanced by C/EBP α and attenuated by knocking down the endogenous AR. Mutation or deletion of the CCAAT elements abrogated the promoter activation by androgen. Under the same conditions, C/EBP α partially inhibited the classical mechanism of promoter activation by AR. The results supported the hypothesis.

Aaditya Shidham – Upper Arlington High School

“Fabrication of Nanoparticles for Diagnosis and Therapy of Tumors”

Abstract

The purpose of this study is to fabricate a gold nanoparticle that may serve as a “nanovehicle” for future use as a drug delivery system, designed for cancer therapy. This will be achieved by constructing a nanoparticle that is small enough to pass through enlarged tumor pores, but too large to penetrate normal cell walls. This was accomplished through the manipulation of the order and the ratios of Hydrogen Tetrachloroaurate, Tetraoctylammonium Bromide, Dodecanethiol, and Sodium Borohydride, and their combined effect on the size of the gold nanoparticle produced. Twelve batches in total were created, and a Tunneling Electron Microscope was used to take representative pictures of each nanoparticle batch. The median size for each trial was determined by cross-sectional area measurements using ImageJ[®] Analysis Software. Multiple regression analysis was performed and a formula was derived to quantify the effect of each chemical on the size of the nanoparticle synthesized. In conclusion, the order of the chemicals increased the size of the nanoparticle, while every other variable change decreased the size of the nanoparticle.

paper presentations

2007 Ohio Junior Science and Humanities Symposium

Jyotiraditya Sinha – North Canton Hoover High School

“Developing a Nanofiber Filter to Eliminate Copper Ions from Water”

Abstract

Heavy metals such as copper, lead and arsenic in water are a serious health and environmental hazard. In this experimental research a filter was developed to eliminate copper ions from water. A novel approach utilizing nanofibers and a chelating agent, ethylenediaminetetraacetic acid (EDTA), was used. The first phase of the research was to develop a procedure to embed EDTA in a nanofiber while the second phase dealt with the actual production of the filter. A total of four filters with EDTA and tecophilic and one filter with just tecophilic were made. Their effectiveness was tested by determining if filtered water showed a reduction in copper concentration through the process of flame atomic absorption spectrophotometry (FAAS). The water filtered with the EDTA containing filter showed no reduction in copper however the water filtered with the tecophilic only filter showed a reduction of up to 46.29%. This was explained due to a later finding that FAAS does not measure only copper ions but also neutralized and chelated molecules containing copper. Further tests, with results pending, are hence being conducted to test for the presence of only harmful copper ions in the filtered water.

Saumitra Thakur – Sylvania Southview High School

“The Effect of Intelligence Profile on Response to Persuasion”

Abstract

Dr. Howard Gardner’s Multiple Intelligences theory proposes an intelligence paradigm composed of nine intelligences. Dr. Petty and Dr. Cacioppo have proposed the Elaboration Likelihood Model (ELM) of persuasion, which divides persuasion into central or peripheral. This project studied the effect of logical intelligence (as defined by Gardner) in terms of response to persuasion (clarified by ELM). The hypothesis was that as logical intelligence increases, subjects will tend toward believing the case founded on argumentation. An ANOVA established that no groups differed in reaction to the data ($p=.06-.54$), not supporting the hypothesis.

paper presentations

2007 Ohio Junior Science and Humanities Symposium

Emily Towers – Lakota West High School

“A Mathematical Analysis of Gait Motion for Rotationplasty Patients through Stereophotogrammetry”

Abstract

Rotationplasty is a limb salvage procedure commonly used to treat malignant bone tumors and cancers of the upper tibial and lower femoral area. We compared the gait of a rotationplasty patient to those of normal subjects. Walking trial data of two healthy patients was collected using spectrophotogrammetry equipment, and analyzed on the EVaRT and Orthotrack programs. Data collected from a seven year old rotationplasty patient was also used. The results show that the knee angles of the rotationplasty patient’s affected knee vary more from the normal range than that of the patient’s healthy knee. The results also show that the standard deviation from the norm of the affected knee is greater than that of a healthy knee.

Mara Wilber – Gilmour Academy

“Antifungal Drug Binding Sites on the SUV-3 Protein”

Abstract

The purpose of this project is to analyze the role of the yeast protein SUV-3 inside the mitochondria and find target domains on which antifungal drugs could be targeted to. SUV-3 is a protein existing in the mitochondria and is vital for cell survival. The RNA helicase encoded by SUV-3 is a critical component of the yeast mitochondrial degradosome (Dziembowski et al., 2003). Inactivation of SUV-3 results in respiratory incompetence, very strong inhibition of mitochondrial translation, and a variety of disturbances of RNA processing and stability, which finally lead to the loss of mitochondrial genomes. SUV-3’s vital role in the cell suggests it contains appropriate domains on which to bind antifungal drugs aimed at countering evolutionary antifungal drug resistance. Yeast was used as a model system and polymerase chain reactions and transformation were used in order to create five mutant constructs and test their ability to support respiration within the yeast cell on a dominant negative plate. This study establishes three domains on the SUV-3 protein possibly suitable for future drug binding.

paper presentations

2007 Ohio Junior Science and Humanities Symposium

Maxwell Zorick – Sylvania Southview High School

“The Effect of Benzodiazepine Withdrawal on Hippocampal CA1 Neuron CaMKII Levels”

Abstract

Tens of millions of patients are prescribed benzodiazepines, such as Valium, for anxiety. After prolonged exposure, unwanted symptoms such as anxiety, insomnia, and seizures may occur upon drug withdrawal. The goal of this study is to understand the mechanisms underlying withdrawal anxiety. Withdrawal hyperexcitability in the hippocampal CA1 region of the brain may be mediated by AMPA receptors. CaMKII is an enzyme that phosphorylates AMPA receptors increasing AMPA receptor conductance of positive ions. This study explored the hypothesis that CaMKII levels are increased at excitatory, asymmetric synapses on CA1 neurons of benzodiazepine withdrawn rats using immunohistochemical and electron microscopic methods. To date, these methods were developed to visualize total CaMKII levels at excitatory synapses.



poster presentations

2007 Ohio Junior Science and Humanities Symposium

Allison Bogdan – Buckeye Valley Middle School

“Does Temperature Affect Butterfly Growth”

Taylor Braun – Sylvania Southview High School

“The Effects of Fertilizer on Lycopene Production in Tomato Plants”

Holly Choi – Sylvania Southview High School

“The Effects of *Allium sativum*, *Glycyrrhiza glabra*, and *Echinacea angustifolia* Solutions on Staphylococci”

David Esber, North Canton Hoover High School

“An Assay of Cadmium Chloride Bioaccumulation in the Common Aquatic Muscle”

Travis Green – Buckeye Valley Middle School

“Soapy Prints”

Marie Hu – Sylvania Southview High School

“The Development of a Selective Aspartate B-Semialdehyde Dehydrogenase Inhibitor”

Lindsey Jorlando – Sylvania Southview High School

“The Effect of Fine Motor Experiences on Cognitive Development”

Evan Lang – Buckeye Valley Middle School

“Chemical Reaction Gas Volume”

Victor Lin – Sylvania Southview High School

“Puncture Characterization and Stab Resistance of Cotton Fabric Saturated with a Non-Newtonian, Shear”

Samantha Loutzenheiser – North Canton Hoover High School

“Tensile Strength of Electrospun Silk, Nylon, and Silk and Nylon Fibers”



poster presentations

2007 Ohio Junior Science and Humanities Symposium

Ellen McDevitt-Stredney – Buckeye Valley Middle School

“Water Effects on Planaria Regeneration”

Ankit Prasad – Sylvania Southview High School

“The Percentage Error Involved in Lichenometric Dating Processes on the Actual Age of Rocks”

Brian Quinn – Sylvania Southview High School

“Determining the Validity of the Listed Ingredients in Various Brands of ZMA”

Maya Ratnam – Sylvania Southview High School

“The Effect of Rapamycin on the Collagen Type I Production in Primary Scleroderma and Normal Fibroblasts”

Bijan Salari – Sylvania Southview High School

“A Comparison of Image Features for Intelligent Recognition of Human Faces”

Sophia Shaddy – Sylvania Southview High School

“The Accuracy of Moss as an Indicator of Acidic Soil”

Jamie Talley – Buckeye Valley Middle School

“Subliminal Messages”

Nigel Wilson – Buckeye Valley Middle School

“Can You Hear Me Now?”

Justin Yang – Sylvania Southview High School

“The Effect of Varying Ratios of Sodium Chloride and Potassium Chloride Deicers on the Development of Vegetation and the Melting of Ice”

judges' score sheet

Name of Student _____ Session: I, II, III, IV, V

I. The Student's Involvement with Science		Maximum Score	Actual Score
Introduction – Statement and identification of problem <ul style="list-style-type: none"> • Clarity in stating problem under study • Creativity/originality – identification of problem; rationale for study • Background information evident 	(20)		
Acknowledgement of sources and major assistance received	(10)		
Research design, procedure (materials & methods), results <ul style="list-style-type: none"> • Student's involvement in designing the investigation • Originality and ingenuity in the research design and apparatus • Selection of the proper equipment for the research task • Identification and control of variables; laboratory skills and techniques • Reproducibility • Quantity and quality of data generated (accuracy, organization, recognition of errors, statistical analysis) 	(20)		
Discussions/Conclusions <ul style="list-style-type: none"> • Clarity in stating conclusion(s); discussion/conclusion relative to purpose of study • Interpretation of data; conclusions supported by data • Limitations in accuracy and significance of results acknowledged • Overall-Problem solving; creativity/originality • Evidence of student's understanding of the scientific or technological principles employed in investigation • Theoretical or practical implications recognized or understood • What was learned? New questions raised? Future research? 	(20)		
	TOTAL (70)		
II. The Student's Effort and Performance		Maximum Score	Actual Score
Duration of research – Amount of work involved; Acknowledgement of major assistance; Evidence of student's understanding	(10)		
Presentation <ul style="list-style-type: none"> • Clarity in stating problem • Clarity in describing design, procedures, problems, and how they were handled • Clarity in presenting data, interpretations, and conclusions • Overall organization • Definition of terms as necessary • Appropriate use of audio-visuals • Clarity of enunciation and voice projection • Response to questions 	(15)		
Abstract Content, format, grammar, organization	(5)		
	TOTAL (30)		
III. Comments			



poster judges' score sheet

STUDENT NAME _____

A. Quality of Research Design: (60 pts)

- _____ 1. Clarity and delineation of problem (10 pts)
- _____ 2. Identification of variables (10 pts)
- _____ 3. Suitability of research equipment (10 pts)
- _____ 4. Recognition of limitations in the data (10 pts)
- _____ 5. Degree to which the data support the conclusions (10 pts)
- _____ 6. Uniqueness of, or originality, in the research topic (10 pts)

B. Quality of Presentation: (40 pts)

- _____ 7. Abstract (10 pts)
- _____ 8. Organization of the presentation (10 pts)
- _____ 9. Clarity of expression of graphs and tables (10 pts)
- _____ 10. Handling of questions from the viewers (10 pts)

C. _____ TOTAL

D. JUDGES' COMMENTS



research paper awardees: 2006

2007 Ohio Junior Science and Humanities Symposium

1st Place Winner – Daniel Litt, Orange High School

- \$2,000 College Scholarship sponsored by the U. S. Army, Navy, and Air Force
- Presented Research Paper at the National JSHS with expenses paid
- Competed for a \$16,000 Scholarship and a trip to the London International Youth Science Forum (LIYSF)

2nd Place Winner – Madhav Chopra, Hoover High School

- \$1,500 College Scholarship sponsored by the United States Army, Navy, and Air Force
- Presented Research Paper at the National JSHS with expenses paid
- Competed for a \$16,000 Scholarship and for the LIYSF trip

3rd Place Winner – Saumitra Thakur, Sylvania Southview High School

- \$1000 College Scholarship sponsored by the United States Army, Navy and Air Force
- Delegate to the National JSHS with expenses paid

4th Place Winner – James Wang, Hoover High School

- \$500 Award sponsored by Perstorp Polyols, Inc.
- Delegate to the National JSHS with expenses paid

5th Place Winner – Wang Pan, Sylvania Northview High School

- \$500 Award sponsored by the Office of the Provost, The University of Toledo
- Delegate to the National JSHS with expenses paid



research paper awardees: 2006

2007 Ohio Junior Science and Humanities Symposium

1st Alternate – Kara Riggs, Big Walnut High School

- \$250 Award sponsored by PRISM, Bowling Green State University

2nd Alternate – Amy Liu, Hoover High School

- \$250 Award sponsored by the COSMOS, Bowling Green State University

2006 Thomas Alva Edison Award – Alex Liber, Sylvania Southview High School

- \$100 Award sponsored by the Department of Environmental Sciences, The University of Toledo



research poster awardees: 2006

2007 Ohio Junior Science and Humanities Symposium

“Best in Show” Award

- **Yifei Feng, Sylvania Southview High School**
 - Delegate to the National JSHS with expenses paid

Outstanding Poster: 1st Place - 9th and 10th Grade Award

- **Amy Liu, Hoover High School**
 - \$50 Award sponsored by SciMaTEC, The University of Toledo

Outstanding Poster: 1st Place - 11th and 12th Grade Award

- **Yifei Feng, Sylvania Southview High School**
 - \$50 Award sponsored by SciMaTEC, The University of Toledo

Outstanding Poster: 2nd Place - 9th and 10th Grade Award

- **Isabel Pereira de Almeida, Bowling Green High School**
 - \$25 Award sponsored by the Department of Biological Sciences, The University of Toledo

Outstanding Poster: 2nd Place - 11th and 12th Grade Award

- **Lindsey Jorlando, Sylvania Southview High School**
 - \$25 Award sponsored by the Department of Biological Sciences, The University of Toledo

Outstanding Poster: Honorable Mention - 9th and 10th Grade

- **Ruth Chang, Sylvania Southview High School**

Outstanding Poster: Honorable Mention - 11th and 12th Grade Award

- **Jiayun Lu, Sylvania Southview High School**

research poster awardees: 2006

2007 Ohio Junior Science and Humanities Symposium

Outstanding Poster: 8th Grade

1st Place:	Dustin Lewis, Buckeye Valley Middle School
2nd Place:	Amanda Roden, Buckeye Valley Middle School
<i>Honorable Mention:</i>	Leesha Clevenger, Buckeye Valley Middle School

Colonel George F. Leist Distinguished Teacher Award

- Hans Glandorff, Bowling Green High School
 - Trip to the National JSHS with expenses paid sponsored by the U. S. Army, Navy, and Air Force and the Ohio JSHS



research paper awards: 2007

2007 Ohio Junior Science and Humanities Symposium

1st Place Winner

\$2,000 College Scholarship sponsored by the United States Army, Navy, and Air Force

- Presents research paper at National JSHS with expenses paid
- Chance to compete for an expenses paid trip to the London International Youth Science Forum (LIYSF)

2nd Place Winner

\$1,500 College Scholarship sponsored by Army, Navy, and Air Force

- Presents research paper at National JSHS with expenses paid
- Chance to compete for an expenses paid trip to the London International Youth Science Forum (LIYSF)

The 1st and 2nd place winners have an opportunity to win the following awards at the National JSHS:

- Six \$16,000 undergraduate, tuition scholarships, awarded to each of the 1st place finalists in the National research paper competition.
- Six \$6,000 undergraduate, tuition scholarships, awarded to each of the 2nd place finalists in the National research paper competition.
- Six \$2,000 undergraduate, tuition scholarships, awarded to each of the 3rd place finalists in the National research paper competition.
- An expenses paid trip to the London International Youth Science Forum, an exchange program bringing together over 400 participants from 60 nations. The London trip is awarded to each of the 1st place National JSHS finalists; the runner-ups are alternate winners.

3rd Place Winner

\$1000 College Scholarship sponsored by Army, Navy and Air Force

- Expenses paid trip to the National JSHS

research paper awards: 2007

2007 Ohio Junior Science and Humanities Symposium

4th Place Winner

\$500 Award sponsored by Perstorp Polyols, Inc.

- Expenses paid trip to the National JSHS

5th Place Winner

\$500 Award sponsored by the Office of the Provost, The University of Toledo

- Expenses paid trip to the National JSHS

1st Alternate

\$100 Award sponsored by SciMaTEC, The University of Toledo

2nd Alternate

\$100 Award sponsored by COSMOS, Bowling Green State University



research poster awards: 2007

2007 Ohio Junior Science and Humanities Symposium

“Best in Show” Award

Expenses paid trip to the National JSHS

Sponsored by:

Perstorp Polyols, Inc.	\$500
SciMaTEC	\$100
COSMOS	\$100

Outstanding Poster: 1st Place - 9th and 10th Grade Award

\$50 Award sponsored by SciMaTEC, The University of Toledo

Outstanding Poster: 1st Place - 11th and 12th Grade Award

\$50 Award sponsored by COSMOS, Bowling Green State University

Outstanding Poster: 2nd Place - 9th and 10th Grade Award

\$25 Award sponsored by the Department of Biological Sciences, The University of Toledo

Outstanding Poster: 2nd Place - 11th and 12th Grade Award

\$25 Award sponsored by the Department of Biological Sciences, The University of Toledo

Thomas Alva Edison Award

\$100 Award sponsored by The Department of Environmental Sciences,
The University of Toledo

Colonel George F. Leist Distinguished Teacher Award

\$500 Faculty Award for Classroom Materials sponsored by the United States Army, Navy,
and Air Force

acknowledgments

2007 Ohio Junior Science and Humanities Symposium

Dr. Emilio Duran

Director, Ohio JSHS, Department of Biological Sciences, The University of Toledo

Dr. Patricia Komuniecki

Co-Director, Ohio JSHS, Chair, Department of Biological Sciences, The University of Toledo

Major Brandee Lockard

Professor, Military Science, U.S. Army, The University of Toledo

Ms. Iris Szelagowski

Ohio JSHS Coordinator

judging teams

Paper Judges

Dr. Donald White, Department of Mathematics, The University of Toledo

Mr. Jerry Szelagowski, Geologist, Industrial Chemist, Retired

Mr. Daniel Yaussy, United States Department of Agriculture, Forest Service

Dr. Mandy Heddle, Department of Environmental Sciences and COSMOS,
Bowling Green State University

Dr. Karl Schwenk, Science Teacher, Tuscarawas High School, Retired

Poster Judges

Ms. Brenda Leady, Judging Coordinator, Department of Biological Sciences,
The University of Toledo

Dr. Sally Harmych, Department of Biological Sciences, The University of Toledo

Dr. Elyce Ervin, College of Human and Health Services, The University of Toledo

Dr. Jill Trendel, College of Pharmacy, The University of Toledo

Dr. Doug Leaman, Department of Biological Sciences, The University of Toledo

Dr. Jeff Sarver, College of Pharmacy, The University of Toledo

Dr. Mac Funk, Department of Chemistry, The University of Toledo

judging teams cont.

2007 Ohio Junior Science and Humanities Symposium

Presiders

Ms. Ann Burkam, Teacher, Buckeye Valley Middle School
Ms. Penny Cobau, Teacher, Sylvania Southview High School
Ms. Connie Hubbard, Teacher, Hoover High School
Ms. Donna Meller, Teacher, Pettisville Local Schools
Mr. Lewis Blevins, Graduate Student, The University of Toledo
Mr. Jake Burgoon, Graduate Student, The University of Toledo

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Ms. Danielle Vorst, Ohio JSHS Student Assistant, The University of Toledo
Mr. Dale Leady, Web Support
Ms. Lisa Addis, Graphic Design
Ms. Kati Szelagowski, Reception Coordinator

Helpers/Chaperones - University of Toledo Students:

Lewis Blevins, Jake Burgoon, Danielle Vorst, UT Undergraduates from BBB

Special Thanks

Clarion Hotel Westgate – Mr. Jeff McFellon, Ms. Betsy Martin, and Staff
Toledo Zoo – Ms. Peggy Coutcher, Mr. Art Dorff

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advisory board

2007 Ohio Junior Science and Humanities Symposium

Dr. Emilio Duran

Ohio JSHS Director
Department of Biological Sciences
The University of Toledo

Major Brandee Lockard

U. S. Army
The University of Toledo

Ms. Iris Szelagowski

Ohio JSHS Coordinator

Dr. Jon Secaur

Roosevelt High School

Ms. Kristen Frizzell

Elmwood High School

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The University of Toledo

Dr. Lena Ballone

Division of Teaching and Learning
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Ms. Penny Karabedian Cobau

Sylvania Southview High School

Ms. Connie Hubbard

North Canton Hoover High School

Ms. Blythe Tipping

Sylvania Southview High School

Dr. Deanne Nowak

Gilmour Academy

Ms. Patricia Hunt

Hathaway Brown High School

Ms. Trevor Jeffries

Science Director
Toledo Public Schools

Ms. Leslie Yaussy, RN, BSN

Public Health Nurse,
Advanced Professional, Delaware

Ms. Janis Steed

The Scotts-Miracle Gro Company

history of the junior science and humanities symposium

In 1958, Colonel George F. Leist, together with the U.S. Army Research Office, initiated the Junior Science and Humanities Symposium (JSHS) for secondary school science students. Today, the U.S. Army Research Office continues to support the Symposium in an effort to encourage young people to pursue careers in various fields of science and engineering. The Departments of the Navy and Air Force now help to sponsor this endeavor.

In 2007, over forty-eight JSHS symposia will be held throughout the United States with additional symposia held in Europe and Asia. The Ohio JSHS is sponsored by The University of Toledo with continued support of the U.S. Army Research Office, U.S. Office of Naval Research, and U.S. Air Force Research Office.

At the Ohio JSHS, first and second place finalists will be chosen to present their research papers at the National JSHS. This year, the symposium will be held in Huntsville, Alabama, on May 2-6, 2007. These two Ohio JSHS finalists will compete at the National JSHS for a \$16,000 scholarship and one of six opportunities to represent the United States at the London International Youth Science Forum (LIYSF) during the summer of 2007. In addition, three other presenters will win an expenses paid trip to the NJSHS as part of their award. These five Ohio JSHS awardees will have the opportunity to interact with over 400 participants in a program of networking and scientific exchange.

Since 1966, forty-three Ohio JSHS winners have presented papers at the National JSHS. Fourteen of these students have subsequently presented their papers at the LIYSF in London, England.

American Nuclear Society-Northern Ohio Section

Presented each year to the student with a project that best explores the utilization of nuclear science or technology

<u>Year</u>	<u>Name</u>	<u>City</u>	<u>School</u>
1995	Brian R. Dulin	Chillicothe	Zane Trace High School
1996	Rachel Rutherford	Kent	Theodore Roosevelt High School
1997-2006	No Award		

thomas alva edison award

The Thomas Alva Edison Award is presented each year to the student who has independently constructed research equipment and carried out a successful research investigation. The 2007 Award in the amount of \$100 is sponsored by the Department of Environmental Sciences at The University of Toledo. The following students are past winners of this award:

<u>Year</u>	<u>Name</u>	<u>City</u>	<u>School</u>
1979	Diana Lauck	Ravenna	Ravenna High School
1981	James Kasner	Millersburg	West Holmes High School
1982	Cindy Raymond	Kent	Roosevelt High School
1983	Eric Wertz	Stow	Lakeview High School
1984	Lyle Reusser	Millersburg	West Holmes High School
1985	David Roberts	Westerville	Westerville North High School
1986	Eric Germann	Van Wert Co.	Lincolnview High School
1987	Rodney Hartman	Carroll	Bloom-Carroll High School
1988	Matthew Fuerst	Wickliffe	Wickliffe Senior High School
1989	Michael McGrath	Ashland	Ashland City High School
1990	Mathew Heston	Carrollton	Carrollton High School
1991	Michael Ruthemeyer	Cincinnati	St. Xavier High School
1992	Gregory Lohman	Medina	Highland High School
1993	Aimee Springowski	Sheffield Lake	Brookside High School
1994	Jeff Smith	Sylvania	Sylvania Southview High School
1995	Stephan M. Gogola	Kent	Theodore Roosevelt High School
1996	Adreanna Decker	Barnesville	Barnesville High School
1997	Lev Horodyskyj	North Royalton	Padua Franciscan High School
1998	Lev Horodyskyj	North Royalton	Padua Franciscan High School
1999	Andrew Sauer	Cincinnati	St. Xavier High School
2000	Margaret Engoren	Sylvania	Sylvania Southview High School
2001	Lindsey Heine	Sylvania	Sylvania Southview High School
2002	James Ristow	Kent	Theodore Roosevelt High School
2003	Jared Steed	Delaware	Buckeye Valley High School
2004	Jared Steed	Delaware	Buckeye Valley High School
2005	Robbie Christian	North Canton	Hoover High School
2006	Alex Liber	Sylvania	Sylvania Southview High School

the colonel george f. leist

distinguished teacher award

Each year, an Ohio teacher is selected to receive The Colonel George F. Leist Distinguished Teacher Award. The University of Toledo and the U.S. Army Research Center sponsor this award of \$500 to purchase books, supplies and equipment for the school. The following teachers have been honored as past winners of the Colonel George F. Leist Distinguished Teacher Award:

<u>Year</u>	<u>Name</u>	<u>City</u>	<u>School</u>
1978	Father Charles S. Sweeney	Toledo	St. John's High School
1989	Father James Lotze	Toledo	St. John's High School
1980	Earl Shafer	Bowling Green	Bowling Green High School
1981	Jerry Jividen	Hudson	Hudson High School
1982	Jon Secaur	Kent	Roosevelt High School
1983	Sister Mary Blandina	Toledo	Cardinal Stritch High School
1984	Rebecca Stricklin	Cincinnati	Oak Hills High School
1985	Kay Ballantine	Thornville	Sheridan High School
1986	Iris Szelagowski	Toledo	Woodward High School
1987	Diane Gabriel	Carroll	Bloom-Carroll High School
1988	Spencer E. Reams	Zanesfield	Benjamin Logan High School
1989	Father Charles S. Sweeney	Toledo	St. John's High School
1990	Jon Secaur	Kent	Roosevelt High School
1991	John A. Blakeman	Sandusky	Perkins High School
1992	Penny Karabedian Cobau	Sylvania	Sylvania Southview H.S.
1993	Vaughn D. Leigh	Hudson	Hudson High School
1994	Penny Karabedian Cobau	Sylvania	Sylvania Southview H.S.
1995	Kathleen Keller	Dayton	Carroll High School
1996	John Jameson	Cincinnati	Cincinnati Country Day
1997	Evelyn Davidson	Cincinnati	Ursuline Academy
1998	Paula Butler	Cincinnati	Cincinnati Country Day
1999	Barbara Kraemer	North Royalton	Padua Franciscan H.S.
2000	Susan Sanders	North Royalton	Padua Franciscan H.S.
2001	Tim Giulivg	Parma	Padua Franciscan H.S.
2002	Darla Warnecke	Miller City	Miller City High School
2003	Peggy Sheets	Upper Arlington	Upper Arlington High School
2004	Connie Hubbard	North Canton	Hoover High School
2005	Ann Burkam	Delaware	Buckeye Valley Middle School
2006	Hans Glandorff	Bowling Green	Bowling Green High School

cummulative record of the state of ohio student presenters to the national jshs 1966-2006

<u>Year</u>	<u>Name</u>	<u>City</u>	<u>School</u>
1966-L	Patricia Fraser	Mayfield Heights	Regina High School
1967-L	Mark Meuty	Toledo	Woodward High School
1968-L	Katharine Lowenhaupt	Cincinnati	Walnut Hills High School
1969-L	Susan Krueger	North Olmsted	Magnificant High School
1970-L	Bruce Arthur	Westerville	Westerville High School
1971-L	Robert Butcher	Wapakoneta	Wapakoneta High School
1972-L	Jon Alexander	Maumee	St. John's High School
1973-L	William Steers	Toledo	St. John's High School
1974-L	Francis Sydnor	Toledo	St. John's High School
1975-L	Jane Stoffregen	Toledo	St. Ursula Academy
1976	Harlan Krumholz	Dayton	Meadowdale High School
1977	Paul Cahill	Akron	East High School
1978	Kevin Anderson	Toledo	St. John's High School
1979-L	Eric Evans	Stow	Stow High School
1980	Carl Von Patterson	Ravenna	Ravenna High School
1981	Kelly McAleese	Medina	Black River High School
1982	Robert Sturgill	Toledo	St. John's High School
1983	Shirley Bodi	Toledo	Cardinal Stritch High School
1984	Douglas Gorman	Cincinnati	Oak Hills High School
1985	Robert Freeman	Thornville	Sheridan High School
1986	Jill Thomley	Toledo	Woodward High School
1987	Kenneth Clubok	Athens	Athens High School
1988	Ron Birnbaum	Toledo	Maumee Valley Country Day School
1989	Aaron P. Garcia	Toledo	St. John's High School
1990	Simon Solotko	Kent	Roosevelt High School
1991	Joann Elizabeth Roy	Sandusky	Perkins High School
1992	Andrew Gano	Sylvania	Sylvania Southview High School
1993	Daniel Stevenson	Hudson	Hudson High School
1994-L	Scott Damrauer	Sylvania	Sylvania Southview High School
1995	Amy Caudy	Sunbury	Big Walnut High School
1996	Paul Gemin	Dayton	Carroll High School
1997	Smita De	Cincinnati	Cincinnati Country Day School
1998	Stephanie Meyers	Cincinnati	Ursuline Academy
1999	Jason Lee Douglas	Cincinnati	Cincinnati Country Day School
2000-L	Ulyana Horodyskyj	North Royalton	Padua Franciscan High School
2001	Ulyana Horodyskyj	North Royalton	Padua Franciscan High School
2002	Ulyana Horodyskyj	North Royalton	Padua Franciscan High School
2003-L	James Zhou	Upper Arlington	Upper Arlington High School
2004	Paul Hoffman	Upper Arlington	Upper Arlington High School
2005	Paul Scheid	Gates Mills	Gilmour Academy
	Laura Johnson	Upper Arlington	Upper Arlington High School
2006	Daniel Litt	Pepper Pike	Orange high School
	Madhav Chopra	North Canton	Hoover High School

L = Winners of National JSHS who presented papers at the London International Youth Science Fortnight (LIYSF).

ohio jshs winners of outstanding poster presentation

<u>Year</u>	<u>Name</u>	<u>City</u>	<u>School</u>
1989	Mike Shaw	Wickliffe	Wickliffe Senior High School
1990	JoAnn Beck	Hamilton	Hamilton High School
1991	1st Michael A. Lake 2nd Thomas J. Mills	Toledo West Liberty	St. John's High School West Liberty Salem High School
1992	1st Scott Damrauer 2nd Trista Schrickel	Sylvania Carrollton	Sylvania Southview High School Carrollton High School
1993	1st Kristie Esterly 2nd Malissa Mackey	Sylvania Sylvania	Sylvania Southview High School Sylvania Southview High School
1994	1st Sara Creque 2nd Sarah Bork	Sylvania Sylvania	Sylvania Southview High School Sylvania Southview High School
1995	1st Marta Kamburowski 2nd Sara Creque 2nd Amy C. Lee	Sylvania Sylvania Sylvania	Sylvania Southview High School Sylvania Southview High School Sylvania Southview High School
1996	1st Carolyn Goh 2nd Patricia Lee	Sylvania Sylvania	Sylvania Southview High School Sylvania Southview High School
1997	9th/10th Grade 1st Kate Jahnke 2nd Kristen Humbach	Sylvania Cincinnati	Sylvania Southview High School Seven Hills Upper School
	11th/12th Grade 1st Evan Russell 2nd Luke Skidmore	Sylvania Bellefontaine	Sylvania Southview High School Benjamin Logan High School
1998	9th/10th Grade 1st David Burgas 2nd Florence Loo	Sylvania Sylvania	Sylvania Southview High School Sylvania Southview High School
	11th/12th Grade 1st Katie Adelsberger 2nd Evan Margelefsky	Bellefontaine Sylvania	Benjamin Logan High School Sylvania Southview High School



1999	9th/10th Grade		
	1st Florence Loo 2nd Arika Kerns	Sylvania Bellefontaine	Sylvania Southview High School Benjamin Logan High School
	11th/12th Grade		
	1st Katie Adelsberger 2nd Sumon Dantiki	Bellefontaine Sylvania	Benjamin Logan High School Sylvania Southview High School
2000	9th/10th Grade		
	1st Erin Sauer 2nd Ross Margelefsky	Cincinnati Sylvania	Ursuline Academy Sylvania Southview High School
	11th/12th Grade		
	1st Lindsey Heine 2nd Stephanie Meyers	Sylvania Cincinnati	Sylvania Southview High School Ursuline Academy
2001	9th/10th Grade		
	1st Andrew Smith 2nd Ericka Johnson	Sylvania Bellefontaine	Sylvania Southview High School Benjamin Logan High School
	11th/12th Grade		
	1st Sean Scully 2nd Mathew Beck	Sylvania Huber Heights	Sylvania Southview High School Wayne High School
2002	9th/10th Grade		
	1st Henry Foo 2nd William Cheng (HM) Sara Salari	Sylvania Sylvania Sylvania	Sylvania Southview High School Sylvania Southview High School Sylvania Southview High School
	11th/12th Grade		
	1st Ericka Johnson & Anna Stormer 2nd Laura Butz (HM) Ben Hayman	Bellefontaine Sylvania Sylvania	Benjamin Logan High School Sylvania Southview High School Sylvania Southview High School
2003	9th/10th Grade		
	1st Jennifer Tawes 2nd Matt Jennings (HM) Raji Reddy	Sylvania Sylvania Sylvania	Sylvania Southview High School Sylvania Southview High School Sylvania Southview High School
	11th/12th Grade		
	1st Sara Salari 2nd Ember Johns (HM) Krystal Roop (HM) Ben Hayman	Sylvania Bellefontaine Toledo Sylvania	Sylvania Southview High School Benjamin Logan High School Woodward High School Sylvania Southview High School

2004	9th/10th Grade		
	1st Michael Chou	Sylvania	Sylvania Southview High School
	2nd Kim Haynam	Sylvania	Sylvania Southview High School
	(HM) Nehama Rogozen	Shaker Heights	Hathaway Brown High School

	11th/12th Grade		
	1st Matt Ricciardi	North Canton	Hoover High School
	2nd Kristen Bury	Sylvania	Sylvania Southview High School
	(HM) Dezary Reed	Bellefontaine	Benjamin Logan High School

2005	9th/10th Grade		
	1st Yifei Feng	Sylvania	Sylvania Southview High School
	2nd Drew Bayer	North Canton	Hoover High School

	11th/12th Grade		
	1st Siwen Dong	Sylvania	Sylvania Southview High School
	2nd Jennifer Haag	Cleveland Heights	Beaumont High School

2005 Poster “Best in Show” Award

Siwen Dong	Sylvania	Sylvania Southview High School
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2006	8th Grade		
	1st Dustin Lewis	Delaware	Buckeye Valley Middle School
	2nd Amanda Roden	Delaware	Buckeye Valley Middle School
	(HM) Leesha Clevenger	Delaware	Buckeye Valley Middle School

	9th/10th Grade		
	1st Holly Choi	Sylvania	Sylvania Southview High School
	2nd Isabel Pereira de Almeida	Bowling Green	Bowling Green High School
	(HM) Ruth Chang	Sylvania	Sylvania Southview High School

	11th/12th Grade		
	1st Yifei Feng	Sylvania	Sylvania Southview High School
	2nd Lindsey Jorlando	Sylvania	Sylvania Southview High School
	(HM) Jiayun Lu	Sylvania	Sylvania Southview High School

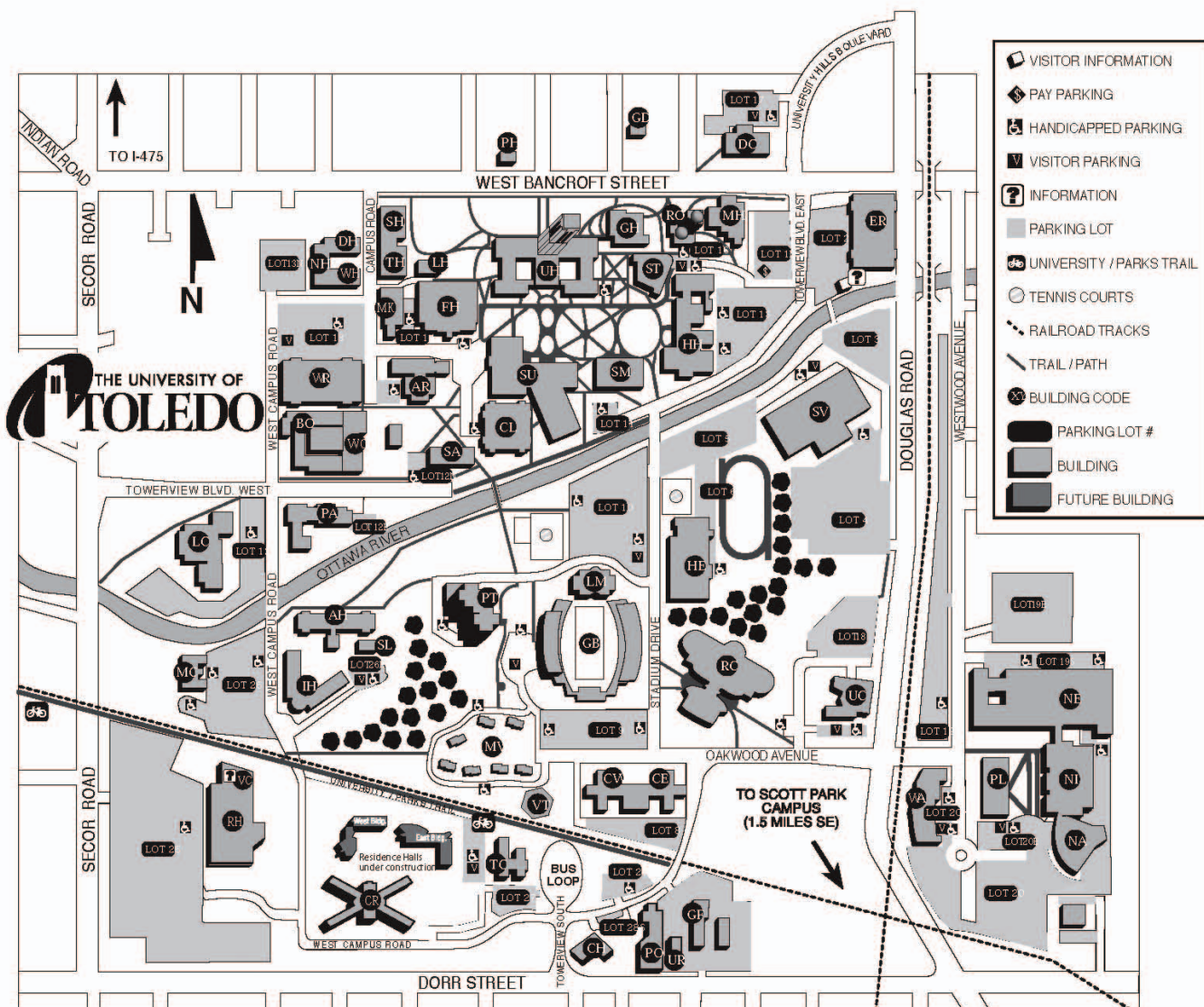
2006 Poster “Best of Show” Award

Yifei Feng	Sylvania	Sylvania Southview High School
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notes





Building Directory

AH Academic House	IH Frank E. and Nancy Horton International House	RO Ritter Astrophysical Research Center
AR Army ROTC Center	LC Law Center	SA Student Classroom Annex
BO Bowman-Oddy Laboratories	LH Libbey Hall	SH Scott Hall
CE Carter Hall East	LM Larimer Athletic Complex	SL Sullivan Hall
CH Child Care Center	MC Student Medical Center	SM Snyder Memorial Building
CL Carlson Library	MH McMaster Hall	ST Stranahan Hall
CR Crossings, The	MK MacKinnon Hall	SU Student Union
CW Carter Hall West	MV James D. McComas Village	SV John F. Savage Hall
DC Driscoll Alumni Center	NA Nitschke Auditorium	TC Transportation Center
DH Dowd Hall	NE North Engineering Building	TH Tucker Hall
ER East Parking Ramp	NH Nash Hall	UC University Computer Center
FH Memorial Field House	NI Nitschke Hall	UR University Recycling Building
GB Glass Bowl Stadium	PA Center for Performing Arts	VC Visitors Center
GD Goddard House	PH Peterson House	VT Varsity 'T' Pavilion
GF Grounds and Fleet Services Building	PL Palmer Hall	WA Westwood Annex
GH Gillham Hall	PO Plant Operations	WH White Hall
HE Health Education Center	PT Parks Tower	WO Wolfe Hall
HH Health and Human Services	RC Student Recreation Center	WR West Parking Ramp
	RH Rocket Hall	

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