

Introduction to Engineering and Science Research/Jackson Research Club Competition Results Summary 2013

Washington Junior Science and Humanities Symposium

March 7-8th, 2013

This weekend students participated in the Washington Junior Science and Humanities Symposium. This is a two-day event that hosted 5 high schools whose students have conducted original research in Science, Technology, Engineering, or Mathematics (STEM), with a forum to present their work to a panel of judges and an audience of high school students, teachers, parents, university faculty and students, and professional scientists.

H.M. Jackson students were recognized at WJSHS with the following awards:

Five of the top fifteen poster presenters at the Washington Junior Science and Humanities Symposium were:

- Shruti Parikh was awarded 2nd place for her research titled: *Phytoremediation of Arsenic in Coal Dust Using Polystichum munitum*
- Artyom Kozorezov was awarded 5th place for his research titled: *Engineering a Device for Utilizing the Kinetic Energy from the Pitching and Heaving Motion of Oceanic Waves through Mechanical Strain Applied to Piezoelectric Elements*

Honorable mention:

- Indira Rayala received Honorable Mention for her research titled: *The Effect on Methane Production During the Anaerobic Digestion of Cow Manure Along with Bio-degradable Plastic*
- Miranda Aiken received Honorable Mention for her research titled: *Effect of Black Water Waste on the Wattage Output of Photosynthetic Microbial Fuel Cells Powered Off by the Growth of Cyanobacteria Anabaena*
- Celia Evans received Honorable Mention for her research titled: *Developing a Cost-Effective Way to Measure the Concussive Force of Head Impacts in High School Athletes and to Alert Their Coaches*

Additionally, one student from Jackson HS was chosen from all of Washington State to orally present among sixteen oral presenters at the event.

- Nikita Sharma received 10th place for her research titled: *Development of a Regression Algorithm to Optimize Energy Utilization from the Solar PV Generation System*

Central Sound Regional Science & Engineering Fair (CSRSEF)

March 9th, 2013

Students from Jackson High School also participated in the Central Sound Regional Science & Engineering Fair (CSRSEF). This is an annual science and engineering competition for 9th-12th grade students in King and Snohomish Counties in Washington State. The CSRSEF encourages and rewards innovative student research and provides professional scientists and engineers the chance to interact with some of the best and brightest young students in the greater Seattle/Everett region. This year over 20 high schools participated. There are three types of student awards at the CSRSEF: Grand Awards, Category Awards, and Special Awards.

H.M. Jackson students were recognized at CSRSEF with the following awards:

Special Awards:

The American Chemical Society: ACS is a congressionally chartered independent membership organization which represents professionals at all degree levels and in all fields of chemistry and sciences that involve chemistry.

- Shruti Parikh was awarded 1st place for her research titled: *Phytoremediation of Arsenic in Coal Dust Using Polystichum munitum*
- Indira Rayala was awarded Honorable Mention for her research titled: *The Effect on Methane Production During the Anaerobic Digestion of Cow Manure Along with Bio-degradable Plastic*
- Miranda Aiken was awarded Honorable Mention for her research titled: *Effect of Black Water Waste on the Wattage Output of Photosynthetic Microbial Fuel Cells Powered Off by the Growth of Cyanobacteria Anabaena*

American Psychological Association - Awarded to the student whose project represents outstanding research in psychology in the Behavioral and Social Science Category.

- Madison Warnke was awarded 1st place for her research titled: *The Effects of 1/f^α Noise on the Cognitive Ability of High School Students in an Educational Setting*

ASM Material Education Foundation Award- Society dedicated to serving the materials science and engineering profession. Through our network of 36,000 members worldwide, ASM provides authoritative information and knowledge on materials and processes, from the structural to the nanoscale.

- Artyom Kozorezov received the award for his research titled: *Engineering a Device for Utilizing the Kinetic Energy from the Pitching and Heaving Motion of Oceanic Waves through Mechanical Strain Applied to Piezoelectric Elements*

Association for Women Geoscientists - Awarded to female students whose projects involve the geosciences in a significant way.

- Shruti Parikh received a 2nd place award for her research titled: *Phytoremediation of Arsenic in Coal Dust Using Polystichum munitum*
- Indira Rayala was awarded Honorable Mention for her research titled: *The Effect on Methane Production During the Anaerobic Digestion of Cow Manure Along with Bio-degradable Plastic*

Genius Olympiad; Exceptional Genius Award- GENIUS Olympiad is an international high school project competition about environmental issues. It is co-organized by the State University of New York at Oswego and the Terra Science and Education Foundation.

- Artyom Kozorezov received the award for his research titled: *Engineering a Device for Utilizing the Kinetic Energy from the Pitching and Heaving Motion of Oceanic Waves through Mechanical Strain Applied to Piezoelectric Elements*
- Shruti Parikh received the award for her research titled: *Phytoremediation of Arsenic in Coal Dust Using Polystichum munitum*

Inspiring Excellence Award-Presented to individuals who demonstrated excellence. Excellence is displayed by the following traits: interest, desire, enthusiasm, perseverance, diligence, scholarship, and positive attitude.

- Miranda Aiken was awarded for her research titled: *Effect of Black Water Waste on the Wattage Output of Photosynthetic Microbial Fuel Cells Powered Off by the Growth of Cyanobacteria Anabaena*

- Peter Cung received the award for his research titled: Producing the Social Facilitation/Social Loafing Effect through Proximal Contact with Friends vs. Strangers

National Society of Professional Engineers - Award given to the most innovative engineering project that demonstrates principles of applied engineering. The winning project will demonstrate technical competence, superior verbal and written presentation, and awareness of ethical implications of engineering.

- Celia Evans was awarded 1st place for her research titled: Developing a Cost-Effective Way to Measure the Concussive Force of Head Impacts in High School Athletes and to Alert Their Coaches

Stockholm Junior Water Prize - Awarded to the best projects relating to or dealing with water treatment, management, protection or quality. They now have the opportunity to advance to the National Water Environment Federation Competition.

- Miranda Aiken was awarded for her research titled: *Effect of Black Water Waste on the Wattage Output of Photosynthetic Microbial Fuel Cells Powered Off by the Growth of Cyanobacteria Anabaena*

US Air Force Certificate of Achievement for Science and Technology:

- Michelle Pyles received recognition for her research titled: *Utilizing Snake Epidermis for Abrasion Resistance in Knee Surgeries*
- Brooke Parsons received recognition for her research titled: *Infant Exposure to Flame Retardants through Dermal Contact with their Clothing in Addition to a Health Risk Assessment using Daphnia pulex*
- Celia Evans received recognition for her research titled: *Developing a Cost-Effective Way to Measure the Concussive Force of Head Impacts in High School Athletes and to Alert Their Coaches*
- Jackie Nguyen received recognition for her research titled: *Minimizing Size and Weight in Standard Military Rations (MRE) for Increased Optimization for Field Use*

Army Certificate of Achievement

- Jackie Nguyen received recognition for her research titled: *Minimizing Size and Weight in Standard Military Rations (MRE) for Increased Optimization for Field Use*

- Katelyn Luque received recognition for her research titled: *Correlating Leadership and Stress to the Prevalence of Gastro-Esophageal Reflux Disease*

Office of Naval Research-Naval Science Award

- Jackie Nguyen received recognition for her research titled: *Minimizing Size and Weight in Standard Military Rations (MRE) for Increased Optimization for Field Use*

Category Awards:

Biochemistry and Microbiology:

- Emma Torve won 1st place with her research titled: *Dangerous overdoses of nitrates in the diets of Europe and North America; causing Methemoglobinemia in infants*

Electrical and Mechanical Engineering:

- Artyom Kozorezov received 2nd place for his research titled: *Engineering a Device for Utilizing the Kinetic Energy from the Pitching and Heaving Motion of Oceanic Waves through Mechanical Strain Applied to Piezoelectric Elements*

Energy and Transportation:

- Miranda Aiken was awarded 2nd place for her research titled: *Effect of Black Water Waste on the Wattage Output of Photosynthetic Microbial Fuel Cells Powered Off by the Growth of Cyanobacteria Anabaena*

Environmental Science and Environmental Management:

- Shruti Parikh was awarded a 2nd place award for her research titled: *Phytoremediation of Arsenic in Coal Dust Using Polystichum munitum*
- Indira Rayala was awarded 3rd place for her research titled: *The Effect on Methane Production During the Anaerobic Digestion of Cow Manure Along with Bio-degradable Plastic*

Materials Science and Bioengineering:

- Jackie Nguyen was awarded 1st place for her research titled: *Minimizing Size and Weight in Standard Military Rations (MRE) for Increased Optimization for Field Use*
- Michelle Pyles was awarded 2nd place for her research titled: *Utilizing Snake Epidermis for Abrasion Resistance in Knee Surgeries*

Medicine and Health Science:

- Katelyn Luque received Honorable Mention for her research titled: *Correlating Leadership and Stress to the Prevalence of Gastro-Esophageal Reflux Disease*

Washington State Science and Engineering Fair (WSSEF)

April 5th-6th, 2013

Students from Jackson High School also participated in the Washington State Science and Engineering Fair over spring break. This is an annual science and engineering competition for 9th-12th grade students in Washington State. The WSSEF encourages and rewards innovative student research and provides professional scientists and engineers the chance to interact with some of the best and brightest young students in Washington.

H.M. Jackson students were recognized at WSSEF with the following awards:

US Army Awards of Excellence- Outstanding Projects

- Celia Evans was given this award for her research titled: *Developing a Cost-Effective Way to Measure the Concussive Force of Head Impacts in High School Athletes and to Alert Their Coaches*
- Indira Rayala was given this award for her research titled: *The Effect on Methane Production During the Anaerobic Digestion of Cow Manure Along with Bio-degradable Plastic*

Genius Olympiad:

- Indira Rayala was given this award for her research titled: *The Effect on Methane Production During the Anaerobic Digestion of Cow Manure Along with Bio-degradable Plastic*

Bonneville Power Administration Achievement in Energy & Environment Award:

- Miranda Aiken was given this award for her research titled: *Effect of Black Water Waste on the Wattage Output of Photosynthetic Microbial Fuel Cells Powered Off by the Growth of Cyanobacteria Anabaena*
- Artyom Kozorezov was given this award for his research titled: *Engineering a Device for Utilizing the Kinetic Energy from the Pitching and Heaving Motion of Oceanic Waves through Mechanical Strain Applied to Piezoelectric Elements*

**Seattle Section of the Institute of Electrical and Electronic Engineers-
Achievement in Electro-Technology Award:**

- Celia Evans was given this award for her research titled: *Developing a Cost-Effective Way to Measure the Concussive Force of Head Impacts in High School Athletes and to Alert Their Coaches*

Washington NASA Space Grant Consortium Second Place Science Winner:

- Madison Warnke was given this award for her research titled: *The Effects of 1/f^α Noise on the Cognitive Ability of High School Students in an Educational Setting*