



Academy of Applied Science



Forty-Seventh Annual

Southeastern Michigan

**Junior Science and
Humanities
Symposium**

**Program
2011**

**WAYNE STATE
UNIVERSITY**

**McGregor Memorial Conference Center
Detroit, Michigan**

March 10 and 11, 2011

Forty-Seventh Annual

SOUTHEASTERN MICHIGAN

JUNIOR SCIENCE AND HUMANITIES
SYMPOSIUM

Thursday and Friday, March 10th and 11th, 2011

SPONSORED BY

WAYNE STATE UNIVERSITY
College of Education

In cooperation with

U.S. Army Research Office - Research Triangle, NC

U.S. Naval Research Office

U. S. Air Force Research Office

U.S. Army Tank - Automotive Command
Research, Development, and Engineering Center
Warren, MI

Academy of Applied Science - Concord, New Hampshire

National Association of Secondary School Principals

**OBJECTIVES OF THE
JUNIOR SCIENCE AND HUMANITIES
SYMPOSIUM PROGRAM**

- 1. To promote research and experimentation in the sciences, mathematics and engineering at the high school level.*
- 2. To recognize the significance of research in human affairs and the importance of humane and ethical principles in the applications of research results.*
- 3. To search out talented youth and talented teachers; recognize their accomplishments at symposia and encourage their continued interest and participation in the sciences, mathematics, and engineering.*
- 4. To expand the horizons of research-oriented students by exposing them to opportunities in the academic, industrial, and governmental communities.*
- 5. To enlarge the number of future adults capable of conducting research and development.*

In order to accomplish these objectives, we enlist the active participation of our local communities in improving the education of our children.

ADMINISTRATION OF JSHS

Dr. Maria M. Ferreira

Associate Professor and Coordinator of Science Education, College of Education, Wayne State University
Director and Coordinator of JSHS

JSHS ADVISORY BOARD

Dr. Christine Chow

Professor – Chemistry
Wayne State University

Dr. David Cinabro

Professor – Physics
Wayne State University

Mr. Jeff Conn

Senior Lecturer
College of Science—Physics
Wayne State University

Dr. Herbert Dobbs

Retired Technical Director of U.S. Army
Tank-Automotive Command

Dr. Thomas Edwards

Associate Professor
Mathematics Education
Wayne State University

Dr. Darin Ellis

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College of Engineering
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Dr. Russell L. Finley

Associate Professor
Center for Molecular Medicine & Genetics
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Dr. John Goudie

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Center

Ms. Margaret Hoard

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Wayne State University

Dr. Steven Imer

Associate Dean for Research,
College of Education
Wayne State University

Dr. Padu Karur

Associate Professor
Experimental Condensed Matter Physics
Wayne State University

Dr. Daniel Kashian

Assistant Professor, Biological Sciences
Wayne State University

Mr. Gene Menton

Detroit Country Day

Ms. Alycia Meriweather

Interim Director, Math/Science Center
Detroit Public Schools

Dr. Eva Powers

Associate Professor, Department of Dance
Wayne State University

Mr. Kevin Rashid

Honors Curriculum Coordinator
Wayne State University

Dr. Craig Roney

Assistant Dean, Teacher Education Division
College of Education
Wayne State University

Dr. David Rueda

Assistant Professor- Chemistry
Wayne State University

Mr. Keith Williams

Minority Student Initiatives
Wayne State University



Welcome
from the JSHS Director
Dr. Maria Ferreira

Dear Students, Teachers, Parents and Colleagues,

It is my great privilege to welcome you to the 47th annual Junior Science and Humanities Symposium (JSHS) of Southeast Michigan. Once again we have a group of very talented young men and women from schools throughout southeast Michigan who will share their research with us. I would like to thank the teachers and mentors for the guidance they provided students throughout the research process and their parents for the support that such activities entail.

An event such as this one cannot be accomplished by one person alone and I would like to express my gratitude to those who every year helps make this event possible: the members of the Advisory Board, judges, speakers and the administration of the College of Education at Wayne State University. A special thanks to Ms. Margaret Hoard for her help in the planning and running of the symposium and to Ms. Deborah Scales and the students from the Edward “Duke” Ellington Conservatory of Music & Art for gracing us with their music during the interlude.

I would like to take this opportunity to give you a short overview of the history of the JSHS, for those of you who might not be familiar with this wonderful program. The JSHS was established in 1958 by the U. S. Army Research Office. In 1995 the Office of Naval Research and in 1997 the U. S. Air Force joined the army in funding the symposium. However, the Academy of Applied Sciences administers the funds and organizes the National Symposium every year.

The primary aim of the JSHS is to promote research among high school students. Every year, more than 10,000 students and their teachers participate in forty-eight regional symposia held on university campuses across the country and in Alaska, Puerto Rico and the Department of Defense schools in Europe and the Pacific. Students presenting at the regional symposia have the opportunity to receive significant awards in the form of scholarships, payable to the university of their choice. The first, second and third student finalists at each of the regional symposium receive \$2000, \$1500, and \$1000 respectively, and all five finalists are invited to attend the National JSHS. The two finalists at each regional symposium present their research once again at the National JSHS where they have the opportunity to receive additional awards. The three finalists in each of the categories at the National JSHS receive \$12,000.00, \$8,000.00 and \$4,000.00 respectively in scholarships and the first place finalist in each category is invited to participate in an expense-paid trip to the London International Youth Science Forum, which brings every year over 400 participants from 60 nations. For additional information about the JSHS please visit: <http://education.wayne.edu/ted/JSHS/>

Thank you for participating in this year’s symposium. I hope your experience is a memorable one.

A handwritten signature in black ink, appearing to read "M. M. Ferreira".

Maria M. Ferreira, Director JSHS

Keynote Speaker



Dr. Claudio Verani
Associate Professor
Department of Chemistry
Wayne State University

Dr. Claudio Verani received his Ph.D. in 2000 in Inorganic Chemistry from the Max-Planck Institute for Bioinorganic Chemistry and the Ruhr-University Bochum in Germany. He spent the next two years (2000-02) at Johns Hopkins University as a postdoctoral fellow before joining the faculty in the Department of Chemistry at WSU in the fall 2002. His research focuses on the use of coordination chemistry to develop metal catalysts for water splitting and metallodrugs. He is one of the few chemists able to combine synthesis, spectroscopy, electrochemical methods, electron paramagnetic resonance, and magnetic susceptibility (typical of coordination chemistry) with isothermal compression and Brewster angle microscopy (typical of surface science).

Dr. Verani Also works closely with colleagues in the Medical School and the Karmanos Cancer Institute researching mechanisms by which metal complexes can inhibit the 26S Proteasome in cells, possibly paving the way to the development of potent and selective anticancer drugs.

Dr. Verani has shared his research through 37 research articles 45 lectures and posters at conferences, and over 30 talks at universities. He has received over 2 million dollars in grants from funding agencies such as the National Science Foundation, The US Department of Energy, and the NSF Petroleum Fund. Today Dr. Verani's talk focuses on renewable sources of energy, including solar, wind, hydraulic, and geothermal. He will discuss how the sun converts hydrogen into helium emitting radiant energy that reaches the Earth in the form of light and heat. The harvesting of this energy and its conversion into chemical energy, the basic premise of the so-called "Hydrogen Economy," will be discussed in detail, as well as the triumphs and shortcomings of this approach. He will close with a discussion of the "law of vital few" and the role that this generation of students can play in helping to shape and secure a better future for all of us.

Where Are They Now?



Amardeep (Amar) Grewal, a native of Southeastern Michigan, was a 2007 JSHS regional and national winner. His research project in bioengineering dealt with the development of a bioactive spinal cord regeneration conduit. In the summer 2007, Amar travelled to London to present his research to students across the world at the London International Youth Science Forum. Since participating in JSHS Amar has graduated from Harvard with a degree in Molecular and Cellular Biology and Economics. He currently works at the University of California Breast Care Center in San Francisco and is applying to medical school for matriculation in the fall. In his spare time, Amar enjoys tutoring local youth, performing bhangra (a traditional dance from Punjab), and watching movies.



Katrina Diaz – JSHS 2007

Katrina is currently a senior at the University of Michigan, pursuing a degree in biology and English. She is also a research assistant in the University Hospital Emergency Department, working on a study examining back pain diagnosis and treatment habits of emergency room care providers. She is the first author on an article presently under review by the *American Journal of Infection Control*, and presented a poster at the Midwest Regional Society for Academic Emergency Medicine conference at Wright State University. She would like to pursue a career in medicine and medical research and is currently applying to medical school. In her spare time Katrina rides and train horses at a farm in Manchester, MI.

Amar and Katrina will discuss how their participation in the JSHS impacted their experiences in college and future research interests.

Interlude with Music

The Edward “Duke” Ellington Jazz Band & “Satin Strings”



The Duke Ellington Jazz Band is an after-school rehearsal group comprised of middle school students from the Edward “Duke” Ellington Conservatory of Music and Art. The students are mentored by the jazz staff of the University of Michigan and perform compositions by Freddie Hubbard and Herbie Hancock to name a few. The group recently performed at the University of Michigan Jazz festival, one of only two middle school jazz bands performing at the festival. **Mr. Herbert Cage directs the band.**



The Edward “Duke” Ellington “Satin Strings” is currently made of musically talented students from grades 4 through 8. The group’s most recent performances include: the Noel Night celebration in Detroit’s Cultural Center, Breakfast with Santa, Prince Hall Mason awards program, Michigan Band & Orchestra Association Solo & Ensemble Festival (MSBOA), and at an educators’ symposium at Wayne State University. Ms. Deborah Scales directs the “Satin Strings.”

The Duke Ellington “Satin Strings”

Campus Tour

A. Paul Schaap Chemistry Building and Lecture Hall <http://www.chem.wayne.edu/>



In the past year and a half, the Department of Chemistry at Wayne State University has undergone renovations and a 9,500 sq. feet expansion costing 42 million dollars. A portion of the funds were provided by a grant supported by a former WSU chemistry professor, A. Paul Schaap, whose research led to the start-up company Lumigen, Inc.

Since 1948, the Department of Chemistry has awarded over 1000 doctoral degrees. During the past three years nearly 60 Ph.D. and 150 Bachelor's degrees in Chemistry have been awarded. Currently, the total graduate student population is about 170 and there are 30 postdoctoral fellow researchers in the Department. Department faculty members account for \$9.49 million in research expenditures and five of the faculty members are listed among the 1,000 most-cited scientists in the world.

During the tour of the Department of Chemistry, which will take place Friday morning, students will have the opportunity to visit labs in which some of the most interesting research in chemistry is taking place.

PROGRAM

THURSDAY AND FRIDAY, MARCH 10 AND 11, 2011

THURSDAY, MARCH 10, 2011

2:30 p.m.- 3:30 p.m.

REGISTRATION

Lobby
McGregor Memorial Conference Center
Wayne State University

3:30 p.m. - 4:00 p.m.

OPENING SESSION

Room BC, First Level, McGregor Conference Center

PRESIDING:

Dr. Maria Ferreira, Director, JSHS
Associate Professor of Science Education
College of Education
Wayne State University

WELCOME/OVERVIEW OF WAYNE STATE UNIVERSITY:

Dr. Craig Roney, Assistant Dean Teacher Education Division
College of Education, Wayne State University

ORIENTATION:

Dr. Maria Ferreira
JSHS Director and Coordinator

4:00 p.m.- 6:00 p.m.

PRESENTATION OF STUDENT PAPERS

McGregor Conference Center

STUDENT PRESENTATIONS

SECTION I ROOM E, McGREGOR

MODERATOR: **Dr. Lori Pile**, Biology Department, Wayne State University

STUDENT PRESENTERS:

Rebecca Blundell

“The Effects of the Visible Light Spectrum on the Human Cortex”

Gabrielle Hunt

“Escherichia Coli’s Hindrance or Promotion of Photosynthesis”

Supriya Jalukar

“A Viable Approach to Creating a Resistant Line of Soybean Plants”

Disha Bora

“Potential of Cord Blood Derived AC133+ Stem Cells to Give Neuronal Cell Types”

Mark Farha

“An Examination of the Activation Ability of Candidate Nanoemulsion Adjuvant and of the Inflammation’s Role in the Mechanism of Nanoemulsion Induced Immune Response”

Mirza Fatima

“Brain Hemisphere Volume Loss Differences by Gender in Alzheimer’s Disease & Healthy Elderly”

JUDGES:

Dr. Claudio Verani, Chemistry Department, Wayne State University

Dr. Choong-Min Kang, Biology Department, Wayne State University

Harsha Desai, TARDEC

SECTION II ROOM F, MCGREGOR

MODERATOR: Dr. Christy Chow, Chemistry Department – Wayne State University

STUDENT PRESENTERS:

Samantha Bojaj

“Nutritional Affects on Anabantidae coloration”

Alexandra Morris

“Application of Vibrational Spectroscopies to Monitor the Oxidation of Edible Oils”

Oliver Lake

“Electrolysis and Faraday’s Laws”

Ann Marie Jakubowski

“The Effects of Oxygen and Temperature on Protein Expression in a Novel, Potentially Microaerophilic Human Intestinal Bacterium”

Hannah Cheriyan

“The Effects of EGF-like Growth Factor Ligands on EGFR Plasma Membrane Accumulation in SUM-149 Breast Cancer Cells”

Scott Manski

“Physicochemical Properties of Desiccants: An Analytical Comparison of Sorption Strength, Capacity, and Structural Characteristics”

JUDGES:

Dr. Robert Arking, Biology Department – Wayne State University

Ms. Katrina Prantzos, TARDEC

Lillian El-Gothamy, TARDEC

SECTION III ROOM G, MCGREGOR

MODERATOR: **Dr. Russell Finley**, School of Medicine – Wayne State University

STUDENT PRESENTERS:

Garrick Brazil

“The Effects of Vitamin B12 on Acute Pain Threshold in Humans”

Abigail Ahlert

“The Effects of Proximal Metatarsal Osteotomies on Hallux Valgus Deformities”

Natasha Sood

“Alcohol Consumption During Pregnancy and Facial Dysmorphology in Offspring at 6-7 Years of Age”

Xiao Zhu

“MED Study of the Default Mode Network in Patients with Schizophrenia”

Ankita Nallani

“Effect of Doublecortin on Brain Tumor Stell Cell Vascular Niche”

Shirley Wu

“The Synergistic Effect of the PIK3CA Gene Mutation H1047R and the Her 2 Gene in Breast Cancer Cells”

JUDGES:

Dr. Kezhong Zhang – School of Medicine - Wayne State University

Dr. Karen Myhr, Biology Department – Wayne State University

Manjiree Jalukar, TARDEC

SECTION IV ROOM H, MCGREGOR

MODERATOR: Dr. Ann Sodja, Biology Department – Wayne State University

STUDENT PRESENTERS:

Vivek Vijayakumar

“The Effects of Ginkgo Biloba in Augmenting Short-term Memory in Adolescents”

Amer Mansoor

“Treatment of Sleep Apnea Relieves Nocturia Depending on Improvement of Sleep Efficiency; Implying that adjacent Hypothalamic Nuclei of Sleep and Kidney Control are Integrated.”

Nithya Vijayakumar

“Exploring Sox 10-Regulated Loci: Toward Identifying CMT1 Candidate Genes”

Jena Siddartha

“Erythrocyte Dysfunction and Amelioration in Hypercholesterolemic Conditions”

Ethan Li

“The Role of a Novel Putative Methyltransferase in Imprinted X Chromosome Inactivation”

Calvin Studebaker

“The Potential of Clostridium sporogenes to Produce 1,2-Propanediol from Glycerol”

JUDGES:

Dr. Vladimir Chernyak, Chemistry Department – Wayne State University

Dr. Angela Trepanier, School of Medicine - Wayne State University

Paul Decker, TARDEC

SECTION V ROOM I, McGREGOR

MODERATOR: Dr. David Cinabro, Physics Department – Wayne State University

STUDENT PRESENTERS:

Rachel Goubert

“The Effect of Angles and Drop Height on the Length and Width of Blood Spatter”

Jessica Payne

“The Effect of Amount of Axe Sprayed and Thread Count on the Time it Takes a Sheet to Catch Fire and Completely Burn”

Haley Waterstraat

“The Effect of Spiral Blade Count on the Voltage Produced by a Vertical Axis Wind Turbine”

Liang Mason

“Matching Preclusions and Conditional Matching Preclusions of Twisted Cubes”

Tuong Vi Nguyen

“Sex Determination of Medieval Sudanese Remains Using Discriminant Analysis of the Femur and Humerus Using Small Samples”

JUDGES:

Dr. David Grueber, Science Education – Wayne State University

Dr. Shawn Hunt, TARDEC

6:00 p.m.- 6:30 p.m.

INTERLUDE - McGregor Lobby

Student Poster Presentations

Music by students from the **Edward “Duke” Ellington Conservatory of Music and Art**

6:30 p.m.- 8:30 p.m.

BANQUET SESSION

Room LM – Lower Level, McGregor Conference Center

PRESIDING: Dr. Maria Ferreira
Director, JSHS

WELCOME: Mr. Paul Decker, Deputy Chief Scientist – U.S. Army Tank-Automotive
Research, Development and Engineering Center (TARDEC)

TOPIC: Research Opportunities at TARDEC

KEYNOTE SPEAKER: Dr. Claudio Verani, Associate Professor
Chemistry Department, Wayne State University

TOPIC: “Lorax’s Unless... Renewable Energy and the Future of Earth”

ANNOUNCEMENT OF FRIDAY’S STUDENT PAPERS:

Dr. Maria Ferreira
Director, JSHS

FRIDAY, MARCH 11, 2011

8:30 a.m. - 9:00 a.m.

CONTINENTAL BREAKFAST

Lobby - McGregor Memorial Conference Center
Wayne State University

9:00-11:45 a.m.

CAMPUS TOUR: The Chemistry Department

(wait in breakfast area for tour guides)

9:30 a.m. - 11:45 a.m.

Final Judging

McGregor Conference Center, Room I

Moderator:

Dr. Thomas Edwards, Mathematics Education – Wayne State University

Judges:

Dr. Peter Andreana – Chemistry Department - Wayne State University

Dr. Dan Kashian, Biology Department – Wayne State University

Dr. David Rueda – Chemistry Department - Wayne State University

Dr. Padu Karur, Physics Department – Wayne State University

12:00 p.m.-1:30 p.m.

LUNCHEON BANQUET

Room BC – First Level, McGregor Conference Center

PRESIDING:

Dr. Maria Ferreira

College of Education

WELCOME:

Dr. Michele Grimm

Associate Dean, College of Engineering

SPEAKERS:

Mr. Craig Phelps, Honors Program – Wayne State University

TOPIC:

Undergraduate Research Opportunities at Wayne State University

TOPIC:

Amardeep Grewal & Katrina Diaz

Where Are They Now? Two former JSBS participants talk about how their involvement in research and the JSBS impacted their college experiences and future research interests.

1:30 p.m. - 2:15 p.m.

CLOSING SESSION

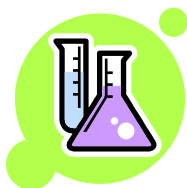
PRESIDING: **Dr. Maria Ferreira**
Director, JSHS

AWARDS: **Presentation of Student Speaker Awards**
Dr. Maria Ferreira, Director

PRESENTATION FROM STUDENT FINALIST

EVALUATION OF PROGRAM:

Participants please complete evaluation forms



STUDENT RESEARCH PAPERS

Name	School	City
Abigail Ahlert	Kalamazoo Math and Science Center	Kalamazoo
Rebecca Blundell	Roseville High School	Roseville
Samantha Bojaj	Roseville High School	Roseville
Disha Bora	Detroit Country Day School	Beverly Hills
Garrick Brazil	Roseville High School	Roseville
Hannah Cheriyan	Detroit Country Day School	Beverly Hills
Annie Dreisback	Grand Rapids Catholic Central	Grand Rapids
Mark Farha	Grand Rapids Catholic Central	Grand Rapids
Rachel Goubert	Macomb Academy of Arts and Science	Armada
Gabrielle Hunt	Roseville High School	Roseville
Ann Marie Jakubowski	Grand Rapids Catholic Central	Grand Rapids
Supriya Jalukar	Troy High School	Troy
Siddhartha Jena	International Academy	Bloomfield Hills
Oliver Lake	Detroit Country Day School	Beverly Hills
Ethan Li	Detroit Country Day School	Beverly Hills
Mason Liang	Troy High School	Troy
Scott Manski	Kalamazoo Math and Science Center	Kalamazoo
Amer Mansoor	Detroit Country Day School	Beverly Hills
Fatima Mirza	Kalamazoo Math and Science Center	Kalamazoo
Alexandra Morris	Kalamazoo Math and Science Center	Kalamazoo
Ankita Nallani	Detroit Country Day School	Beverly Hills
Tuong Vi Nguyen	Grand Rapids Catholic Central	Grand Rapids
Jessica Payne	Macomb Academy of Arts and Science	Armada
Natasha Sood	Detroit Country Day School	Beverly Hills
Calvin Studebaker	Kalamazoo Math and Science Center	Kalamazoo
Vivek Vijayakumar	Roseville High School	Roseville
Nithya Vijayakumar	Detroit Country Day School	Beverly Hills
Haley Waterstraat	Macomb Academy of Arts and Science	Armada
Shirley Wu	Detroit Country Day School	Beverly Hills
Xiao Zhu	Troy High School	Troy

STUDENT PARTICIPANTS

Name	School	City
Abigail Ahlert	Kalamazoo Math and Science Center	Kalamazoo
Vashti Armstrong	Cass Technical High School	Detroit
Angelu Barcega	Roseville High School	Roseville
Rebecca Blundell	Roseville High School	Roseville
Samantha Bojaj	Roseville High School	Roseville
Disha Bora	Detroit Country Day School	Beverly Hills
Garrick Brazil	Roseville High School	Roseville
Malika Brewer	Marvin L. Winans Academy of Performing Arts	Detroit
Fredrick Cain	Marvin L. Winans Academy of Performing Arts	Detroit
Mitchell Cavanaugh	Grand Rapids Catholic Central	Grand Rapids
Hannah Cheriyan	Detroit Country Day School	Beverly Hills
Alene Collins	Marvin L. Winans Academy of Performing Arts	Detroit
Annie Dreisback	Grand Rapids Catholic Central	Grand Rapids
Preston Dukes	Marvin L. Winans Academy of Performing Arts	Detroit
Mark Farha	Grand Rapids Catholic Central	Grand Rapids
Rolando Farris Jr	Marvin L. Winans Academy of Performing Arts	Detroit
Nicholas Fitzsimons	Macomb Academy of Arts and Science	Armada
Rachel Goubert	Macomb Academy of Arts and Science	Armada
Karmeisha Gross	Marvin L. Winans Academy of Performing Arts	Detroit
Meghan Hebert	Roseville High School	Roseville
Carly Hedemark	Roseville High School	Roseville
Gabrielle Hunt	Roseville High School	Roseville
Aminul Islam	Cass Technical High School	Detroit
Michelle Jackson	Marvin L. Winans Academy of Performing Arts	Detroit
Ann Marie Jakubowski	Grand Rapids Catholic Central	Grand Rapids
Supriya Jalukar	Troy High School	Troy
Siddhartha Jena	International Academy	Bloomfield Hills
Clayton Jewett	Marvin L. Winans Academy of Performing Arts	Detroit
Diamon Johnson	Marvin L. Winans Academy of Performing Arts	Detroit
Oliver Lake	Detroit Country Day School	Beverly Hills
Ethan Li	Detroit Country Day School	Beverly Hills
Mason Liang	Troy High School	Troy

Scott Manski	Kalamazoo Math and Science Center	Kalamazoo
Amer Mansoor	Detroit Country Day School	Beverly Hills
Devin McGowan	Marvin L. Winans Academy of Performing Arts	Detroit
Fatima Mirza	Kalamazoo Math and Science Center	Kalamazoo
Rebecca Moore	Roseville High School	Roseville
Alexandra Morris	Kalamazoo Math and Science Center	Kalamazoo
Ankita Nallani	Detroit Country Day School	Beverly Hills
Tuong Vi Nguyen	Grand Rapids Catholic Central	Grand Rapids
Chase Nouhan	Roseville High School	Roseville
Jessica Payne	Macomb Academy of Arts and Science	Armada
Nia Shumake	Marvin L. Winans Academy of Performing Arts	Detroit
Nicholas Somoski	Roseville High School	Roseville
Natasha Sood	Detroit Country Day School	Beverly Hills
Ryan Stateler	Roseville High School	Roseville
Calvin Studebaker	Kalamazoo Math and Science Center	Kalamazoo
Zachary Thompson	Roseville High School	Roseville
Jakhari Tolbert	Marvin L. Winans Academy of Performing Arts	Detroit
Nithya Vijayakumar	Detroit Country Day School	Beverly Hills
Vivek Vijayakumar	Roseville High School	Roseville
Angela Walton	Marvin L. Winans Academy of Performing Arts	Detroit
Haley Waterstraat	Macomb Academy of Arts and Science	Armada
Kirk Wawrzyniak	Roseville High School	Roseville
Shirley Wu	Detroit Country Day School	Beverly Hills
Xiao Zhu	Troy High School	Troy

**TEACHER/SUPERVISOR/ADMINISTRATIVE
PARTICIPANTS**

Name	School	City
Rebecca Brewer	Troy High School	Troy
Leigh Ann Eriks	Grand Rapids Catholic Central	Grand Rapids
John Goudie	Kalamazoo Math and Science Center	Kalamazoo
Tim Harris	Marvin L. Winans Academy of Performing Arts	Detroit
Donald Johnson	Cass Technical High School	Detroit
Gene Menton	Detroit Country Day School	Beverly Hills
John Meyers	Detroit Country Day School	Beverly Hills
Megan Phillips	International Academy	Bloomfield Hills
John Reinowski	Roseville High School	Roseville
Michael Rourke	Macomb Academy of Arts and Science	Armada
Margaret Slankster	Troy High School	Troy
Scott Wheeler	Roseville High School	Roseville

Judges

Dr. Peter Andreana
Chemistry Department
Wayne State University

Dr. Robert Arking
Biology Department
Wayne State University

Dr. Vladimir Chernyak
Chemistry Department
Wayne State University

Dr. Christy Chow
Chemistry Department
Wayne State University

Dr. David Cinabro
Physics Department
Wayne State University

Mr. Paul Decker
TARDEC- U.S. Army Tank Automotive
Research Development & Engineering Center

Harsha Desai
TARDEC- U.S. Army Tank Automotive
Research Development & Engineering Center

Dr. Thomas Edwards
Mathematics Education
Wayne State University

Lillian El-Gothamy
TARDEC- U.S. Army Tank Automotive
Research Development & Engineering Center

Dr. Russell Finley
School of Medicine
Wayne State University

Dr. David Grueber
Science Education
Wayne State University

Dr. Shawn Hunt
TARDEC- U.S. Army Tank Automotive
Research Development & Engineering Center

Manjiree Jalukar
TARDEC-U.S. Army Tank Automotive
Research Development & Engineering Center

Dr. Choong-Min Kang
Biology Department
Wayne State University

Dr. Padu Karur
Physics Department
Wayne State University

Dr. Dan Kashian
Biology Department
Wayne State University

Dr. Karen Myhr
Biology Department
Wayne State University

Dr. Lori Pile
Biology Department
Wayne State University

Ms. Katrina Prantzalos
Electrical Engineer – TARDEC- U.S. Army
Tank Automotive Research
Development & Engineering Center

Dr. David Rueda
Chemistry Department
Wayne State University

Dr. Ann Sodja
Biology Department
Wayne State University

Dr. Angela Trepanier
School of Medicine
Wayne State University

Dr. Claudio Verani
Chemistry Department
Wayne State University

Dr. Kezhong Zhang
School of Medicine
Wayne State University

SPECIAL ARRANGEMENTS AND ACKNOWLEDGMENTS

Ms. Doris E. Cousens, Director
National Junior Science & Humanities Symposium
Academy of Applied Science

Dr. & Mrs. Herbert Dobbs
Association U.S. Army, Detroit Chapter

Dr. Thomas Edwards
Associate Professor of Mathematics Education
Wayne State University

Dr. Michele Grimm
Associate Dean for Academic Affairs, Engineering
Wayne State University

Ms. Margaret Hoard
TED Secretary, College of Education
Wayne State University

Mrs. Sandra Jenkins
TED Division Secretary, College of Education
Wayne State University

Ms. Debbie Moore
McGregor Conference Center

Ms. Joyce Martin
Administrative Assistant, College of Education
Wayne State University

Mr. Kevin Rashid
Honors Program
Wayne State University

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World-Class Education in the Real World