

# INDIANA JUNIOR ACADEMY OF SCIENCE

Report for 2015

Approximately 110 students, teachers, and parents representing eight schools attended the annual fall meeting of the Indiana Junior Academy of Science held at Indiana University Bloomington on November 13, 2015.

Both the Outstanding Junior Scientist and Research Presentation competitions were judged by IU Bloomington research faculty, senior scientists, post docs and graduate students. I wish to acknowledge them here, they were:

## **Abstract Judges:**

Dr. Katy Pilachowski, IU Department of Astronomy  
Dr. Julia van Kessel, IU Department of Biochemistry  
Dr. Thomas Snaddon, IU Department of Chemistry  
Dr. Megan Thielges, IU Department of Chemistry  
Dr. Jinfeng Liao, IU Department of Physics  
Ms. Ellen Reat, IU Department of Geology

## **OJS Judges:**

Dr. Scott Gens, IU Department of Physics  
Ms. Sally Miller, IU Department of Psychological & Brain Sciences  
Ms. Lauren Nease, IU Department of Microbiology  
Dr. Catherine Reck, IU Department of Chemistry

## **Research Presentation Judges:**

Ms. Samantha Faber, IU Department of Psychological & Brain Sciences  
Ms. Michelle Marasco, IU Department of Biology  
Dr. Pooja Saxena, IU Department of Chemistry  
Dr. Arndt Schimmelman, IU Department of Geological Sciences  
Mr. Robert Policastro, IU Department of Biology

Mr. Tyler Barnes, IU STARS Scholar gave a keynote address titled “**Electrochemical Grafting: A Unique Approach to Electrode Modification**” that was very well received by the students and teachers. Tyler won the IJAS Outstanding Junior Scientist and Research Presentation awards in 2010. In addition to talking about his research, he talked about his journey from doing research in high school to being an undergraduate researcher in the IU STARS program and about his future plans. Five competitions and research tours filled out the remainder of the day followed by the awards ceremony. A brief description and a list of winners for each competition are outlined below.

### **1. The Problem Solving Exam**

This exam provides students with a fun and meaningful exercise in scientific knowledge and problem-solving skills. Teddie Phillipson-Mower, Associate Director of Science Outreach wrote this year's exam. Top four students were recognized with certificates and top two students received plaques.

**This year's winners were:**

**1<sup>st</sup> Place – Christian Dennis, Marian High School**

2<sup>nd</sup> Place – Justin VanSickle, Beech Grove High School

3<sup>rd</sup> Place – Gylf Forsberg, New Albany High School

4<sup>th</sup> Place (tie) – Tony Kramer, Marian High School

4<sup>th</sup> Place (tie) – Olivia Eiler, New Albany High School

### **2. The Issues Presentation Competition**

This competition encourages students to learn about the political, social, and scientific issues surrounding the selected topic. This year, the topic was ***“Should we look to biotechnology to ensure our current and future food security?”*** Each competitor gave a five minute presentation on the topic without the use of visual aids. The students were judged by a panel of peers in the morning session then the top three were judged again by a panel of undergraduate students from the IU Science, Technology, and Research Scholars Program in the afternoon. Plaques were awarded to the top two students, all finalists received a certificate.

**This year's finalists are:**

Dinuka Cooray, Marian High School

Asmaa Mahoui, Eman Schools

Elizabeth Bolyard, Northwestern High School

**1<sup>st</sup> Place – Dinuka Cooray, Marian High School**

2<sup>nd</sup> Place – Asmaa Mahoui, Eman Schools

### **3. Science Olympiad Competition**

This year we held one Science Olympiad competition called “Physics Lab.” Up to two students from each school were allowed to participate. Students tested their knowledge in the areas of thermodynamics and/or basic physical properties of materials. Certificates were given to the 2<sup>nd</sup> place team and plaques were awarded to the top scoring school.

This year's winners are:

**1<sup>st</sup> Place – Isaiah Borders & Jonathan Ritter, North Daviess School**

2<sup>nd</sup> Place – Cowen Shears & Abigail Sheets, New Albany School

3<sup>rd</sup> Place – Elizabeth Bolyard & Brayden Chou, Northwestern School

4<sup>th</sup> Place – Abdelrahman Nada & Hamza Bhai, Eman Schools

#### **4. The Research Paper Competition**

This competition allows students who have carried out an original scientific investigation the opportunity to present their work to a panel of judges. Students who wish to compete in this event submit an abstract of their work to the IJAS Director in early October. Twenty-six abstracts were submitted for review and the top twelve finalists were selected by a panel of impartial abstract judges from IU Bloomington. The top twelve finalists all received a \$25 cash award from the Indiana Academy of Science. At the IJAS meeting, the finalists gave a 10-minute poster presentation to a panel of judges who evaluated them on originality, research procedures, and presentation skill. The second and third place winners received a plaque. The first place winner received a plaque and a \$1,000 scholarship from the Indiana Academy of Science to attend any Indiana College or University.

This year's winners are:

- 1<sup>st</sup> Place – 449 points: Kamna Gupta, Carmel High School**
- 2<sup>nd</sup> Place – 443.5 points: Muhammed Amir Sankari, Eman Schools
- 3<sup>rd</sup> Place – 428.0 points: Sreya Vemuri, Carmel High Schools
- 4<sup>th</sup> Place – 418.5 points: Meena Moorthy, North Central High School
- 5<sup>th</sup> Place – 416.5 points: Richard Du, Carmel High School
- 6<sup>th</sup> Place – 415.0 points: Victoria Combs, Northwestern High School
- 7<sup>th</sup> Place – 413.5 points: Asmaa Mahoui, Eman Schools
- 8<sup>th</sup> Place – 401.5 points: Theresa Rice, Marian High School
- 9<sup>th</sup> Place – 388.5 points: Alexis Thornberg, Marian High School
- 10<sup>th</sup> Place – 383.0 points: Kayla Bevington, Northwestern High School
- 11<sup>th</sup> Place – 377.0 points: Dinuka Cooray, Marian High School
- 12<sup>th</sup> Place – 365.5 points: Gylf Forsberg, Eman Schools

#### **5. The Outstanding School Award**

The Outstanding School Award is given to the school with the most participation points. To calculate this score, credit is given for every abstract submitted, more credit for those abstracts accepted for the Research and for Outstanding Junior Scientist competitions, and finally for rank scores for the top presentations. Each school received credit for entering students in the Issues Competition, for having a judge at the Issues presentations, and for entering students in the Problem Solving Exam and Science Olympiad Competition. More credit was given to the top five winners.

The top three schools and the teachers representing them today are:

- 1<sup>st</sup> Place – 43 points: Marian High School, Mr. Ken Andrzejewski**
- 2<sup>nd</sup> Place – 39 points: Eman Schools, Mrs. Mia Sankari
- 3<sup>rd</sup> Place – 38 points: Carmel High School, Ms. Jennifer Marlow

## **6. The Outstanding Junior Scientist Competition**

This event recognizes those students who are exemplary in overall scholarship as well as scientific ability and achievement. Each school may nominate two students for this competition. The top ten nominees are then selected to compete at the IJAS meeting where they are interviewed by a panel of judges. The Outstanding Junior Scientist is selected based upon his/her academic record, involvement in original research and extracurricular scientific activities, abstract scores and the interview. The top ten finalists received a \$25 cash award from the Indiana Academy of Science. The second and third place winners received plaques and the Most Outstanding Junior Scientist received a plaque and a \$1,000 scholarship from the Indiana Academy of Science to attend any Indiana College or University.

This year's winners are:

- 1<sup>st</sup> Place – 176.37 points: Kamna Gupta, Carmel High School**
- 2<sup>nd</sup> Place – 148.25 points: Muhammed Sankari, Eman Schools
- 3<sup>rd</sup> Place – 129.93 points: Sreya Vemuri, Carmel High School
- 4<sup>th</sup> Place – 128.50 points: Alexis Thornberg, Marian High School
- 5<sup>th</sup> Place – 128.15 points: Asmaa Mahoui, Eman Schools
- 6<sup>th</sup> Place – 117.88 points: Dinuka Cooray, Marian High School
- 7<sup>th</sup> Place – 113.28 points: Elizabeth Bolyard, Northwestern High School
- 8<sup>th</sup> Place – 111.30 points: Gylf Forsberg, New Albany High School
- 9<sup>th</sup> Place – 110.63 points: Victoria Combs, Northwestern High School
- 10<sup>th</sup> Place – 94.8 points: Jenna Meadows, North Daviess High School

## **7. Tours of research labs, facilities, and museums on campus**

Students had two opportunities, one in the morning and one in the afternoon, to go on a research based tours. Tours included:

- Dr. Chen Yu's Research Lab <http://psych.indiana.edu/faculty/chenyu.php>
- Kirkwood Observatory <http://www.astro.indiana.edu/kirkwoodinfo.shtml>
- Psychological & Brain Sciences Tour – includes a chance to see our brain collection (real human brains), a tour of the Imaging Research Facility <https://www.indiana.edu/~irf/home/>, the shop where the brain race car demo is located and building tour with discussions about various labs and their research.
- Chemistry Tours included the following stops:
  - Molecular Structure Center <https://www.iumsc.indiana.edu/>
  - Nuclear Magnetic Resonance Facility <https://www.iumsc.indiana.edu/>
  - Chemistry Glass Shop – <http://glass.chem.indiana.edu/>