## Junior Academy Program 2019
April 27, 2019 at Kentucky State University

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>Event Description</th>
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</thead>
<tbody>
<tr>
<td>Saturday, April 27, 2019 8:45am - 9:15am</td>
<td>Judges Orientation&lt;br&gt;Hathaway Hall 130</td>
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<tr>
<td>Saturday, April 27, 2019 8:45am - 10:00am</td>
<td>Registration&lt;br&gt;Main Lobby</td>
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<tr>
<td>Saturday, April 27, 2019 9:30am - 11:30am</td>
<td>High School - Computer Science and Engineering&lt;br&gt;Hathaway Hall 223</td>
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<tr>
<td>9:30 - Classification of full EEGs (electroencephalograms) for biometrics and medical applications through machine learning an</td>
<td>Topic: High School Computer Science &amp; Engineering - morning presentations</td>
</tr>
<tr>
<td>9:45 - Development of a Software to Diagnose Cardiovascular Disease Using Preprocessing and a Convolutional Neural Network</td>
<td>Sarvesh Babu&lt;br&gt;duPont Manual</td>
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</tbody>
</table>
Gravity Controlled Water Filtration System, Aafreen Shaik, duPont Manual High School, 120 West Lee Street Louisville, KY

10:15 - Novel Approach of Rating Reinforced Concrete Member Strength Using Pouillet's Law
Nimish Mathur, duPont Manual High School

10:30 - Smart Irrigation
Sasmi Heellage, Ballard High Schools

10:45 - The Effect of Differing Numbers on Chaos of Distributions to Five Five’s Problem
Sterling Chancy, duPont Manual High School

11:00 - The Effect of Light Tracking and Tower Based Solar Energy Systems on Photovoltaic Energy Generation
Varun Chandrashekhar, Dupont Manual High School

11:15 - The Optimization of Wave Analysis Buoy Using Piezoelectrics
Murari Srinivasan, Dupont Manual High School

Saturday, April 27, 2019 9:30am - 11:30am
Parent / Teacher lounge and coffee
Hathaway Hall 123 Auditorium
### High School - Biological Topics I

**Hathaway Hall 120**

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation</th>
<th>Topic</th>
<th>Other Group Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:45</td>
<td>Examining Natural Product and Drug Combination Effects on the Reduction of HT-29 Cells to Enhance Chemotherapy Treatment</td>
<td>High School Biological Topics - morning presentations</td>
<td>Smrithi Balasubramanian duPont Manual High School</td>
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<td>Other Group Member</td>
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<td>Sreevatsa Vemuri duPont Manual High School</td>
</tr>
<tr>
<td>10:00</td>
<td>How Does RAS Effect the Amount of PD-L1 on Lung Cancer Cell Surfaces?</td>
<td>High School Biological Topics - morning presentations</td>
<td>Sushruth Muthuluru duPont Manual High School</td>
</tr>
<tr>
<td>10:15</td>
<td>Human Genome Editing</td>
<td>High School Biological Topics - morning presentations</td>
<td>Aditi Kona North Oldham High School</td>
</tr>
<tr>
<td>10:30</td>
<td>Investigate Whether KY Hemp Extract is safe for NHOE Cells as Opposed to being Cytotoxic to Ovarian Cancer Cells</td>
<td>High School Biological Topics - morning presentations</td>
<td>Kathy Le duPont Manual High School</td>
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<td>Other Group Member</td>
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<tr>
<td></td>
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<td>Cindy Truong duPont Manual High School</td>
</tr>
<tr>
<td>10:45</td>
<td>Mechanisms that Tumors Employ in Immune System Evasion: The Role Played by Exosomes and Cancer-Associated Fibroblasts</td>
<td>High School Biological Topics - morning presentations</td>
<td>Naomi Kim duPont Manual High School</td>
</tr>
<tr>
<td>11:00</td>
<td>Small Molecules for the Treatment of Bladder Cancer</td>
<td>High School Microbiology and Medical Anthropology - morning presentations</td>
<td>Aakash Vadhanam duPont Manual High School</td>
</tr>
</tbody>
</table>
11:15 - Testing Tracking of Tumors through Lung Tracking and Spine Tracking on the local efficacy of CyberKnife treatment

Topic: High School Biological Topics - morning presentations

Romith Paily
duPont Manual High
School

Saturday, April 27, 2019 10:00am - 11:30am

High School - Biological Topics II

Hathaway Hall 122

10:00 - CAN THE IMMUNE SYSTEM BE REPROGRAMMED TO ERADICATE MULTIPLE SCLEROSIS USING NOVEL BIOLOGICS (PRELIMINARY APPROACH)?

Topic: High School Biological Topics II - morning presentations

Rojin Shirwan
duPont Manual High
School

10:15 - Developing a method of Room Temperature Biospecimen Preservation via Tetramethyl Orthosilane (Sol-Gel) Encapsulation and

Topic: High School Biological Topics II - morning presentations

Kavya Koneru Other Group Member
DuPont Manual High (if any)
School

WITHDRAWN - Effects of Grape Components on Periodontitis

Topic: High School Biological Topics II - morning presentations

Anne Liang
DuPont Manual High
School

10:45 - Exercise as a Model for the Development of High Fat Diet Induced Alzheimer's Treatment

Topic: High School Biological Topics II - morning presentations

Aysha Puzhakkaraillath
DuPont Manual High
School

11:00 - In Vivo Analysis of the Influence of the Migration of Mascara on Ocular Discomfort and Tear Production

Topic: High School Biological Topics II - morning presentations

Sanya Mehta Other Group Member
student (if any)
Aakash Mehta
student

11:15 - Sulforaphane on SuHx-Induced Pulmonary Arterial Hypertension in Mice Model Through Non-Invasive Echocardiography
Topic: High School Biological Topics II - morning presentations
Emma Huang
duPont Manual High School

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Saturday, April 27, 2019 10:00am - 11:30am

Middle School - Session I
Hathaway Hall 419

10:00 - A new trend of type 2 diabetes in children: Genetic factors and improved treatment options
Topic: Middle School 1 - morning presentations
Vedha Balamurugan
North Oldham Middle School, Goshen

10:15 - Analyzing Cancer Data and Possible Connection to Fly Ash
Topic: Middle School 1 - morning presentations
Erika Graham
Saint Francis of Assisi

10:30 - E-Cigarette Secondhand Smoke Toxicity
Topic: Middle School 1 - morning presentations
Sarah Jenkins
St. Francis of Assisi

10:45 - Exploring Concussion Treatment
Topic: Middle School 1 - morning presentations
Leah Niemann
St. Francis of Assisi

11:00 - The Effects of PET Plastics on the Gut Microbiome
Topic: Middle School 1 - morning presentations
Sarah Kwasny
St. Francis of Assisi School

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Saturday, April 27, 2019 10:00am - 11:30am

Middle School - Session III
Hathaway Hall 306
<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Topic</th>
<th>Speaker</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00</td>
<td>Automotive Exhaust: A Selective Environment for Bacteria</td>
<td>Middle School 3 - morning presentations</td>
<td>Mary Shea Ballantine</td>
<td>St. Francis of Assisi</td>
</tr>
<tr>
<td>10:15</td>
<td>Bio-Desalination</td>
<td>Middle School 3 - morning presentations</td>
<td>Varshini Loganathan</td>
<td>Meyzeek Middle School</td>
</tr>
<tr>
<td>10:30</td>
<td>Exploring the Effects of Circadian Rhythms and Wound Healing</td>
<td>Middle School 1 - morning presentations</td>
<td>Chloe Nunn</td>
<td>St. Francis of Assisi Catholic School</td>
</tr>
<tr>
<td>10:45</td>
<td>How Does Trauma Impact Emotional Recognition</td>
<td>Middle School 3 - morning presentations</td>
<td>Ella Spriggs-Dial</td>
<td>student</td>
</tr>
<tr>
<td>11:00</td>
<td>How Your Mood Affects Your Heart Rate</td>
<td>Middle School 3 - morning presentations</td>
<td>Alena Polimati</td>
<td>Meyzeek Middle School</td>
</tr>
<tr>
<td>11:15</td>
<td>Mathematical Model that Predicts the Quality of Drinking Water</td>
<td>Middle School 3 - morning presentations</td>
<td>Sachi Dronawat</td>
<td>Meyzeek Middle School</td>
</tr>
</tbody>
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**Saturday, April 27, 2019 10:15am - 11:30am**

**High School - Chemistry**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
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<th>Speaker</th>
<th>School</th>
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<tbody>
<tr>
<td>10:15</td>
<td>A Method of a Hydrolysis Based Pretreatment and Torrefaction for Kenaf Stalk Conversion to Value Added Products</td>
<td>High School Chemistry- morning presentations</td>
<td>Viyathma</td>
<td>duPont Manual High School</td>
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</tbody>
</table>
10:30 - Effect of the Conducting Polymers Polyaniline on Pseudocapacitance in Supercapacitors
Topic: High School Chemistry - morning presentations
Sukitha Gunasena
duPont Manual High
School

11:00 - Removing Pharmaceutical Remains from Aqueous Solutions: An Exploration of Various Carbon Based Nano-Materials
Topic: High School Chemistry - morning presentations
Jiaen Hu
Other Group Member
(if any)
eleanor hummel
duPont manual

11:15 - Using Electrospun Nanofibers to Filter Volatile Organic Compounds
Topic: High School Chemistry - morning presentations
Shreeya Julakanti
DuPont Manual High
School

High School - Microbiology and Medical Anthropology
Hathaway Hall 232
Saturday, April 27, 2019 10:15am - 11:30am

10:15 - Benzoyl Peroxide and Salicylic Acid on Bacterial Growth
Topic: High School Microbiology and Medical Anthropology - morning presentations
Aanika Garre
DuPont Manual High
School

10:30 - Comparing and Correlating Vexation between Testosterone Levels
Topic: High School Microbiology and Medical Anthropology - morning presentations
Aamya Vohra
N/A

10:45 - Delivery System of Probiotic Bacterial Strain to Combat G.Vaginalis
Topic: High School Microbiology and Medical Anthropology - morning presentations
Harshith Gontla
Dupont manual
highschool

11:00 - Detection of Tobacco Mosaic Virus from Different Cigarette Products Available in Market
Topic: High School Microbiology and Medical Anthropology - morning presentations
Jonathan Joh
duPont Manual
Highschool

11:15 - The Effects of Music Therapy on Schizophrenia
Topic: High School Behavioral & Social Science - morning presentations
Anisha Polimati
duPont Manual

Middle School - Session II
Hathaway Hall 413

10:15 - EXPLORING PLASTICS AS INSULATION
Topic: Middle School 2 - morning presentations
ELI OETKEN
ST FRANCIS OF ASSISI

10:30 - Generating Electricity using Pressure
Topic: Middle School 2 - morning presentations
Tejaswin Gonta
Meyzeek Middle School

10:45 - How nanotechnology can help clean up oil spills?
Topic: Middle School 2 - morning presentations
Anirudh Srinivasan
Meyzeek Middle school

11:00 - Smart Streetlight
Topic: Middle School 2 - morning presentations
Swetha Senthilnathan
Noe Middle School

11:15 - Using Activated Coconut Shell Powder to Remove Nitrates from Groundwater
Topic: Middle School 2 - morning presentations
Amina Puzhakkaraillath
Meyzeek Middle School

High School - Botany and Environmental Science

Saturday, April 27, 2019 10:15am - 11:30am

Saturday, April 27, 2019 10:30am - 11:30am
10:30 - Analysis of the Bioaccumulation of Methylmercury in the Organs and Tissues of Bald Eagles
Topic: High School Botany and Environmental Science - morning presentations
Evan Hendrickson
Gatton
Academy/Western
Kentucky University

10:45 - Creating a Learning Computer Model to Predict Weather
Topic: High School Botany and Environmental Science - morning presentations
Shyam Ravishankar
duPont Manual High School
Other Group Member
Ranga
Chennakesavula
duPont Manual High School

11:00 - The Effect of Annona Muricata on Pancreatic Cancer Cells
Topic: High School Botany and Environmental Science - morning presentations
Vasa Vemuri
duPont Manual High School

11:15 - The Substitute for Soil: Using Coconut Coir as a Natural Growth Medium to Increase Water Conservation
Topic: High School Botany and Environmental Science - morning presentations
Gitanjali Jaikumar
duPont Manual High School

Saturday, April 27, 2019 11:30am - 12:00pm
Group Photo & Announcements

Saturday, April 27, 2019 12:00pm - 1:00pm
Lunch on Your Own
Hill Student Center/
Underwood Cafeteria

Saturday, April 27, 2019 1:00pm - 3:00pm
Pre-College Afternoon Science Activity - all students
High School Finalist Presentations by Category Winners
Hathaway Hall 123 Auditorium
Saturday, April 27, 2019  1:15pm - 2:45pm

Awards Ceremony and Election of KJAS Officers
Hathaway Hall 123 Auditorium
Saturday, April 27, 2019  3:00pm - 4:00pm

Junior Academy Business meeting with elections for student officers
Awards in all categories will be presented.

Find photos from the 2018 Junior Academy meeting [HERE](#)

2020