

# Northern Virginia Regional Virtual Science & Engineering Fair Entries



**March 8 – March 21, 2021**

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# NORTHERN VIRGINIA REGIONAL VIRTUAL SCIENCE & ENGINEERING FAIR

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## **Animal Sciences**

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7 AS	100	Meyers, Isaac; Meyers, Jonathan <i>Strike Force Carpenter Ant (TEAM)</i>	George Washington
9 AS	101	Berger, Cecilia <i>The Effect of Essential Oils on Brine Shrimp Larvae</i>	Washington-Liberty
9 AS	102	Dickerson, Rachel <i>Prevalence of Mixed Species Herding with Giraffe Calves</i>	Washington-Liberty
10 AS	103	Jones, Amelia <i>The Effect of California Wildfires on Native Birds</i>	T.C. Williams

### **4 Total Projects in Animal Sciences**

## **Behavioral and Social Sciences**

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9 BE	200	Snell, Julia <i>Does Sex Effect If a Person Will Turn on Their Camera in an Online Class?</i>	H-B Woodlawn
10 BE	201	McAndrew, Rory; Doherty, Gillian <i>The Effect of Occupation on the Difference in Pay Between Males and Females (TEAM)</i>	Washington-Liberty
11 BE	202	Berry, Colin <i>The Impact of Penalties, Population Density, and Partisanship on Compliance with Stay-at-Home Orders During COVID-19</i>	Yorktown
12 BE	203	Fugle, Sebastian <i>Image Color Distribution and Moment on Time Observed</i>	Yorktown

### **4 Total Projects in Behavioral and Social Sciences**

## Biochemistry

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7 BI	300	Hardwick, Katie <i>How Much DNA Can Fit in a Cell?</i>	Dorothy Hamm
7 BI	301	Lau, Melissa <i>The Effect of Temperature on the Production of CO<sub>2</sub> by Yeast</i>	Gunston
7 BI	302	Piechowski, Esperanza <i>The Effect of Antibody Strength on Pathogens</i>	Dorothy Hamm
8 BI	303	Vogel, Henry <i>The Effect of Salt on Yeast Growth</i>	H-B Woodlawn
9 BI	304	Bartrum, Olivia <i>The Effect of pH on the Solubility of Acetaminophen</i>	Wakefield
11 BI	305	Zheng, Charles <i>Genomic Biomarker Discovery in Lung Cancer</i>	Episcopal

### **6 Total Projects in Biochemistry**

## Chemistry

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7 CH	400	Chikh-Ali, Cherin <i>The Effect NaHSO has on the Precipitation of Tin</i>	Dorothy Hamm
7 CH	401	Menta, Arhan <i>The Effect of the Type of Stain Remover on the Shade of the Coffee Stain</i>	Williamsburg
7 CH	402	Panza, Bethany <i>The Effect of the Concentration of Salt or Sugar on Evaporation Rates</i>	Kenmore
8 CH	403	Akay, Peter <i>The Effect of Acidity of Drinks on Erosion of Eggshells</i>	Williamsburg
8 CH	404	Floom, Kate <i>The Effect of the Temperature of a Heating Chamber on the Time it Takes to Develop a Latent Fingerprint</i>	Williamsburg
8 CH	405	Menn, Bella <i>The Effect of the Type of Wax on the Change in Mass of the Candle</i>	Dorothy Hamm
8 CH	406	Tulchinsky, Ophelia <i>The Effect of the Type of Salt on the Amount of Corrosion of the Wires</i>	Dorothy Hamm
9 CH	407	Baasansukh, Haley <i>The Type of Mordant on the Weight of the Yarn</i>	Washington-Liberty
9 CH	408	Bartrum, Sophia <i>What is the Effect of Different Flours on the Height of a Cupcake?</i>	Wakefield

9 CH	409	Finkelstein, Allie <i>The Effect of the Type of Fruit on How Much Electrical Energy It Can Conduct</i>	Yorktown
9 CH	410	Rosas, Monica <i>The Effect of Various Drinks' pH Levels on the Change of My Salivary pH</i>	Yorktown
10 CH	411	Brodsky, Julia <i>Optimization of an Electrocoagulation System for the Removal of Polyatomic Ions from Water</i>	H-B Woodlawn
10 CH	412	Carey, Julia <i>The Effect of Photo Type on Photo Fading from UV Light</i>	Yorktown
10 CH	413	Johnson, Phillip <i>The Effect of the Type of Rust Removal Technique on the Amount of Rust Removed</i>	Yorktown
10 CH	414	Wahl, Joanna <i>The Amount of Blue Dye #1 in Various Blue-Colored Products</i>	Wakefield

**15 Total Projects in Chemistry**

## Engineering

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7 EN	500	Name Withheld Upon Request <i>The Effect of Magnetic Strength on Diagonal Deflection of a Magnetically Levitated Platform</i>	Williamsburg
7 EN	501	Reiss, Sam <i>The Effect of 3D Printed Infill Patterns on the Load Weight</i>	George Washington
8 EN	502	Connor, Hosanna <i>The Effect of the Diameter of a Geodesic Dome on its Weight-bearing Capacity</i>	Kenmore
8 EN	503	Oberkirsch, Evan <i>Armature Design and its Effect on Motor Torque</i>	Gunston
8 EN	504	Wearmouth, Isla <i>The Effect of the Type of Stormwater Filtration Method on Litter</i>	Kenmore
9 EN	505	Berhanu, Eyuel <i>The Effect of 3D Printing Material on 3D Print Strength</i>	Washington-Liberty
9 EN	506	Brooke, Phillip <i>The Effect of Type of Insulation on Change in Water Temperature</i>	Yorktown
9 EN	507	Savage, William <i>Autonomous Temperature Dependent Entry Controller (ATDEC)</i>	H-B Woodlawn
10 EN	508	Henshaw, Morgan <i>Building an Autonomous Car</i>	Yorktown



10 EN	509	Sanchez, Raphael <i>The Effect of Different Building Shapes on Buildings Affected by Vortex Shedding</i>	Washington-Liberty
10 EN	510	Sartori, Colin <i>The Study of Clean Energy Harvesting Using Piezoelectric Transducers in Footwear</i>	Yorktown
11 EN	511	Mukhtar, Suheila <i>Solar-Powered Irrigation: The Future of Sustainable Rural Agriculture</i>	Wakefield

**12 Total Projects in Engineering**

## Environmental and Earth Sciences

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7 EV	600	Chudiwale, Vedica <i>Effect of Different Water Sources on the Amount of Nitrate</i>	Dorothy Hamm
7 EV	601	Davis, Zoe <i>The Effect of the Acidity on the Mass of Shells</i>	Williamsburg
7 EV	602	Lach-Hab, Nadia <i>Crystal Clear: The Effect of Water Filter Design on Water Clarity</i>	Dorothy Hamm
8 EV	603	Connel, Helena <i>The Effects of Different Sources of Water on Lettuce Seed Root Growth</i>	Williamsburg
8 EV	604	Hemsh, Emma <i>The Effect of a City's Number of Public Transportation Trips per Capita on Carbon Footprint per Capita</i>	Dorothy Hamm
8 EV	605	Minnigh, Charlotte <i>What is the Effect of Green Roofs on Building Temperature?</i>	Williamsburg
8 EV	606	Mohanty, Anna <i>The Effect of Electromagnetic Field Flux Density on the Biomass of <i>Chlorella vulgaris</i></i>	Williamsburg
8 EV	607	Tallis, Dylan <i>The Effect of Salinity on Soybean Growth</i>	Jefferson
8 EV	608	Waldman, Amelia <i>The Effect of the Type of Soil Fertilizer on the pH Variation of the Groundwater</i>	Williamsburg

8 EV	609	Gaublomme, Peter; Nachnani, Anand <i>The Effect of UVB Light on the Change in Growth of a Cucumber Plant (TEAM)</i>	Dorothy Hamm
9 EV	610	Gerardi, Mara <i>The Effect of the Average Annual Temperature of California on the Area Burned by Wildfires</i>	Washington-Liberty
9 EV	611	Shapiro, Harriet <i>The Effect of Plant Type of a Green Roof on Internal Building Temperature</i>	Washington-Liberty
9 EV	612	Sinha, Ananya <i>The Effect of Additives on Melting Ice</i>	Arlington Tech
9 EV	613	Stroud, Lanyi <i>The Effect of Ventilation Method on Level of Indoor Carbon Dioxide</i>	Yorktown
9 EV	614	Boerckel, Kathryn; Grove, Allison <i>The Effect of Weather Patterns on the Spread of Airborne Plastic (TEAM)</i>	Washington-Liberty
10 EV	615	Carlson, Isla <i>The Effect of Air Pollution on the Efficiency of Solar Panels</i>	Wakefield
10 EV	616	Coe, Elizabeth <i>The Effect of Different Litter on the pH of Water</i>	Wakefield
10 EV	617	Docena, Elise Francesca <i>The Effect of the Melting of Arctic Ice on Phytoplankton Abundance</i>	Washington-Liberty

10 EV	618	Goeke, Madi <i>A Solution to Plastic Pollution: An Investigation into Microplastic Removal from Water Using Ferrofluid</i>	Washington-Liberty
10 EV	619	Lansbury, Ava <i>The Effect of the pH of Simulated Acid Rain on Radish Seed Germination</i>	Washington-Liberty
10 EV	620	MacMullen, Maggie <i>The Effect of Varying Levels of CO<sub>2</sub> in Micropropagation Through Autotrophic Tissue Culture on the Growth of Radish Plants</i>	Washington-Liberty
10 EV	621	Sherlick, Maya <i>The Effect of Water Temperature on the Amount of Dissolved Oxygen in Water</i>	Arlington Tech
10 EV	622	Watson, Ivy <i>The Effect of Firework Display Length and Frequency on Amount of Particulate Matter 2.5 in the Air</i>	Washington-Liberty
10 EV	623	Wayman, Elizabeth <i>The Effect of Percentage Cloud Cover on the Amount of Solar Energy Produced</i>	Yorktown
10 EV	624	Estevao, Rebecca; Gordon, Alexandra <i>The Effect of the Type of Soap on the Germination of Radish Seeds (TEAM)</i>	Washington-Liberty
11 EV	625	Ackleson, Thomas <i>Modeling <i>Oncorhynchus nerka</i> Populations Near Pebble Mine, Alaska</i>	Washington-Liberty
11 EV	626	Quinn, Sam <i>The Effect of Different Types of Rocks on Nutrient Runoff</i>	Yorktown

11 EV	627	Stievater, Adam <i>The Effect of Highway Proximity on Lichen Prevalence in Prince William Forest Park</i>	Washington-Liberty
12 EV	628	Licato, James <i>Development of a Zeolite Composite Material for the Simultaneous Removal of Pharmaceuticals, Personal Care Products (PPCPs), and Perfluorinated Alkyl Substances (PFAS) in Water Treatment</i>	Washington-Liberty

**29 Total Projects in Environmental and Earth Sciences**

## Mathematics and Computer Science

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7 MC	700	Stievater, Henry <i>The Effect of School Size, Percent of Teachers with a Master's Degree or Higher, and Per-Pupil Expenditures on SOL Pass Rates</i>	Swanson
8 MC	701	Klinger, Andrew <i>Weather Conditions Affect on GPS Running Routes</i>	Swanson
9 MC	702	Silva, Leila <i>The Effect of Different Materials on WiFi Signal Strength</i>	Yorktown
10 MC	703	Beasley, Elise <i>Connecting Monitors with Raspberry Pi Zero W</i>	Yorktown
10 MC	704	Haron, Rose <i>Predicting Ideal Group Sizes for COVID-19 Pooled Testing Using Mathematics</i>	Washington-Liberty
10 MC	705	Sharma, Ambica <i>The Effect of Algorithm-Based Neural Network Machine Learning on the Projection of the Basis and Progression of Alzheimer's Disease</i>	Washington-Liberty
11 MC	706	Gordon, Max <i>Using AI to Detect and Deter Telemarketers</i>	T.C. Williams

### **7 Total Projects in Mathematics and Computer Science**

## Medical and Health Sciences

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9 ME	800	Abera, Elida <i>The Effect of Different Types of COVID-19 Testing on the Frequency of False Negatives</i>	Wakefield
9 ME	801	Ahmed, Sabrin <i>HIV Infection Rate in Fiji, Malaysia, and Ukraine from 2009--2019</i>	Washington-Liberty
9 ME	802	Ben Hammouda, Malek <i>The Relationship Between Exposure to Fine Particulate Matter During Pregnancy and Preterm Births</i>	Washington-Liberty
9 ME	803	Buchholz, Claire <i>The Effect of Deep Knee Bends on Knee Stress</i>	Yorktown
10 ME	804	Aniss, Lina <i>The Effect of Tissue Thickness on Temperature Change Induced by Cellular Radiation</i>	Washington-Liberty
10 ME	805	Cunningham, Charlotte <i>The Effect of Elapsed Time on the Thickness Level of Commercial Kefir as Measured by the IDDSI Flow Test and Framework</i>	Washington-Liberty
10 ME	806	Felker, Kara <i>The Effect of the Occurrence of CD226 Gene Variants on the Death Rate of COVID-19</i>	Washington-Liberty
10 ME	807	Licato, Anne <i>The Effect of Proximity and Particles Exhaled Based on Breath Rate on the Number of COVID-19 Virus Particles Accumulated</i>	Washington-Liberty
10 ME	808	Portner, Benjamin <i>The Effect of the Chemical Constituency of Type of Milk Dominant in an Area on the Percent of Lactose Persistence of Human Groups</i>	Washington-Liberty

10 ME	809	Qadir, Sanah <i>The Effect of Different Painkillers on the Time of Solubility</i>	Yorktown
11 ME	810	La Piana, Caroline <i>Is There a Correlation Between Current Smokers and Heart Attack Mortality for Individuals over 65?</i>	Washington-Liberty
11 ME	811	Marco, Emma <i>The Effect of pH on Ibuprofen Solubility</i>	Yorktown
11 ME	812	Nemirow, Devin <i>Testing the Effects of Tampons on pH in a Simulated Uterine Environment</i>	Washington-Liberty
11 ME	813	Schiavo, John <i>The Effect of Filter Material in a Face Mask on the Reduction of Outward Aerosol Spread</i>	Arlington Tech
11 ME	814	Shiells, Katherine <i>A Study of Popular Artificial Turf Surfaces' Ability to Sustain Bacterial Growth and Associated Health Ramifications</i>	Bishop O'Connell
11 ME	815	Tripathi, Anika <i>The Relationship Between Particulate Matter 2.5 and Case-fatality Percent from COVID-19 in Virginia Counties</i>	Washington-Liberty
11 ME	816	Wang, Susan <i>Single-cell RNA Sequencing Analysis of Human Neural Grafts Revealed Unexpected Cell Type Underlying the Genetic Risk of Parkinson's Disease</i>	Episcopal
12 ME	817	Lee, Junwoo <i>Study on the Application of 3D Artificial Skin Structure to Induce Immune Response to Blood Cells of Allergens</i>	Episcopal

**18 Total Projects in Medical and Health Sciences**



**Microbiology**

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*The Microbiology category has been incorporated into the Biochemistry category for the 2021 Virtual Regional Science Fair.*

## Physics and Astronomy

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7 PH	1000	Stidman, Sophia <i>The Effect of Different Types of Friction on a Model Train Car's Speed</i>	Gunston
7 PH	1001	Van Hoey, Josephine <i>The Effect of the Material of String on the Sound Wavelength</i>	Gunston
7 PH	1002	Hwang, Theodore; Hwang, Dorothy <i>How Does the Type of Current at Different Voltages Affect Electromagnetic Force? (TEAM)</i>	Gunston
8 PH	1003	Merdad, Obai <i>The Effect of the Number of Rocket Fins on the Trajectory of a Rocket</i>	Dorothy Hamm
8 PH	1004	Shah, Sheel <i>The Effect of the Type of Mask on Air Flow</i>	Dorothy Hamm
8 PH	1005	Thomas, Alexander <i>Ultraviolet Light Protection: The Guide</i>	Swanson
8 PH	1006	Bass, Sonia; Bass, Ally <i>Discovering the Brachistochrone (TEAM)</i>	Swanson
9 PH	1007	Chung, Eric <i>The Effect of Propellant Amount on Projectile Launch Distance</i>	Yorktown
9 PH	1008	Kaminski, Maya <i>The Effect of Artificial Lighting on the Ability to View the Night Sky</i>	Washington-Liberty

9 PH	1009	Kappler, Rachel <i>Do Different Temperatures of Water Freeze Faster?</i>	H-B Woodlawn
9 PH	1010	Planey, Violet <i>The Effect of Car Model on Speed</i>	T.C. Williams
9 PH	1011	Watchman, Sam <i>The Effect of Constellation on Signal Power at 21 cm</i>	Arlington Tech
10 PH	1012	Ashfaq, Zainab <i>The Egg Drop</i>	T.C. Williams
10 PH	1013	Bain, Angelica <i>The Effect of Different Blue Light Mitigation Techniques on LED Blue Light Irradiance</i>	Washington-Liberty
10 PH	1014	Buckley, Ford <i>The Effect of Spoiler Angle on Downward Force Produced</i>	Yorktown
10 PH	1015	Ermovick, Ryan <i>The Effect of Insulated Tumbler on Change in Water Temperature Over Time</i>	Yorktown
11 PH	1016	Sheehy, Alexander <i>The Effect of Face Masks on Volumes of Different Frequencies that Correlate to Speech</i>	Yorktown

**17 Total Projects in Physics and Astronomy**

## Plant Sciences

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7 PS	1100	Coppenbarger, Sarah <i>The Effects of Coffee on Mung Bean Growth</i>	Kenmore
8 PS	1101	De la Cruz-Novey, Coral <i>The Effect of Different Caffeine Products on Plant Growth</i>	Gunston
8 PS	1102	Lowe, Sydney <i>The Effect of Hydrogen Peroxide on Seed Germination</i>	Kenmore
8 PS	1103	Shah, Jaya <i>The Effect of Legumes on the Germination Rate of Lactuca sativa</i>	Williamsburg
9 PS	1104	Guith, Kendall <i>The Effect of Different Concentrations of Road Salt on the Growth of Grass Seeds</i>	Yorktown
9 PS	1105	Zouhon, Moya <i>The Effect of Eco-Friendly Multi-Purpose Cleaners and their Ratios on the Height of a White Dutch Clover</i>	Wakefield
10 PS	1106	Huson, Teo <i>The Allelopathic Effect of Allelochemicals such as Juglone in Juglans nigra on Zea mays and Glyphosate-Resistant Weed Amaranthus retroflexus</i>	Washington-Liberty
11 PS	1107	Whiting, Abigail <i>The Effect of Nitrate Concentrations in Water Sources on Shade Mix Grass Growth</i>	Washington-Liberty
11 PS	1108	Williams, Fiona <i>Do Antibiotics Affect the Germination and Height of Plants?</i>	Washington-Liberty

### **9 Total Projects in Plant Sciences**