SIMONS SUMMER RESEARCH PROGRAM

POSTER PRESENTATIONS, AUGUST 2018

Programs for Research & Creative Activity
Stony Brook University

Student Presenter(s)	Project Title	Mentor(s)
Kylen Bao *John P. Stevens HS (NJ)*	Inactivation of a Proteorhodopsin-like Gene in *Aurantiochytrium* by Double Homologous Recombination	**Dr. Jackie Collier** *School of Marine & Atmospheric Sciences*
Anjali Chakradhar *High Technology HS (NJ)*	Design and Evaluation of Novel Vascular Disrupting Agents as Anti-cancer Compounds	**Dr. Iwao Ojima** *Chemistry, Institute for Chemical Biology & Drug Discovery*
Nicholas Chan *Stuyvesant HS (NY)*	Noninvasive Characterization of Intramuscular Electrode Implant Integrity for Chronic Spinal Cord Injury Research	**Dr. Prithvi Shah** *Health & Rehabilitation Sciences*
Chidera Ejikeme *Half Hollow Hills HS West (NY)*	Amino Acid Residue-Specific Interaction between gC1qR and Cytotoxic Peptides of Various Pathogenic Microorganisms with Homology to HIV-1 gp41 3S	**Dr. Berhane Ghebrehiwet** *Medicine*
Raymond Feng *Pittsford Sutherland HS (NY)*	Further Insight into AID-induced Somatic Hypermutation through Examination of DNA Secondary Structure and Genomic Similarity	**Dr. Thomas MacCarthy** *Applied Mathematics & Statistics*
Aaron Forman *Hastings HS (NY)*	Using Cross-Linking Agents to Enhance the Mechanical Properties of Nanocellulose Films	**Dr. Benjamin Hsiao** *Chemistry*
Abby Frenkel *University School of Milwaukee (WI)*	The Developmental Role of NMDAR GluN1 Subunits in Zebrafish	**Dr. Howard Sirotkin** *Neurobiology & Behavior*
Jamie Fu *Novi HS (MI)*	Automatic Breast Lesion and Axillary Lymph Node Segmentation from Breast Cancer Magnetic Resonance Images Using Convolutional Neural Networks	**Dr. Fusheng Wang** *Biomedical Informatics, Computer Science;* **Dr. Tim Q. Duong** *Radiology*
Kelsey Ge *Ward Melville HS (NY)*	Multidecadal Trends in North Atlantic Tropical Cyclone Behavior	**Dr. Brian Colle** *School of Marine & Atmospheric Sciences*
Julia Grossman *George W. Hewlett HS (NY)*	Use of Fluorine as a Proxy to Determine the Effect of Geothermal Fluids on Strain Rate, Effective Crustal Viscosity and Landscape Deformation in the Great Basin	**Dr. Troy Rasbury** **Dr. William Holt** *Geosciences*
Richard Hausman *Horace Mann School (NY)*	Mapping Basal Forebrain Cholinergic Projections to Fear-Associated Regions	**Dr. Lorna Role** *Neurobiology & Behavior* **Dr. David Talmage** *Pharmacological Sciences*
Helen He *Westlake HS (TX)*	Austin Public Housing Strategic Placement: Quantifying Property Performance and Resident Needs to Improve New Resident Placement	**Dr. Thomas Woodson** *Technology & Society*

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Helen He *Westlake HS (TX)*	Food Data at a Glance: Visualizing Nutrition Facts Labels For a Personalized Mobile Nutrition App Experience	**Dr. Klaus Mueller** *Computer Science*
Stephanie Hu *Bridgewater-Raritan HS (NJ)*	TOR Invade or Not TOR Invade? Exploring the Role of TOR Pathway Inhibition in the Cell Cycle Regulation of Basement Membrane Invasion	**Dr. Benjamin Martin** **Dr. David Q. Matus** *Biochemistry & Cell Biology*
Angie Jang *Edgemont Jr-Sr HS (NY)*	Investigating the Role of Cell Cycle State during Convergent Extension in *D. Rerio*	**Dr. Benjamin Martin** **Dr. David Q. Matus** *Biochemistry & Cell Biology*
Miles Kaming-Thanassi *Northfield Mount Hermon School (MA)*	The Role of Correlation in Predicting the Conductance of Single Molecule Circuits	**Dr. Matthew Reuter** *Applied Mathematics & Statistics*
Sarah Kelso *Huntsville HS (AL)*	Inactivation of the Carotenoid Synthesis Gene in a Non-Photosynthetic Marine Protist	**Dr. Jackie Collier** *School of Marine & Atmospheric Sciences*
Anjalie Kini *Phillips Academy (MA)*	Identifying Motifs Downstream of Off-Target Reads in dscRNA-seq Data	**Dr. Robert Patro** *Computer Science*
Cindy Kuang *Hunter College HS (NY)*	Behavior-Specific Optogenetic Stimulation of Amygdala Terminals in the Dorsolateral Striatum Can Plastically Modulate Compulsive Digging Behavior in a Mouse Model for OCD	**Dr. Joshua Plotkin** *Neurobiology & Behavior*
Varun Kumar *Bergen County Academies (NJ)*	Monoclonal Antibody-Based gC1qR Targeted Cancer Therapy	**Dr. Berhane Ghebrehiwet** *Medicine*
Erta Kurti *Hunter College HS (NY)*	Developing Novel Fatty Acid Binding Protein (FABP) Inhibitors with Analgesic and Anti-Cancer Properties	**Dr. Iwao Ojima** *Chemistry, Institute for Chemical Biology & Drug Discovery*
Se Ri Lee *Choate Rosemary Hall (CT)*	Effects of Various Monomers on the Structure and Performance of Reverse Osmosis Membranes Fabricated Via Interfacial Polymerization	**Dr. Benjamin Hsiao** *Chemistry*
Michal Lewkowicz *Hicksville Senior HS (NY)*	Novel Distributed Algorithm for Optimally Selecting Leaders in Supervisory Robotic Swarm Control	**Dr. Nilanjan Chakraborty** *Mechanical Engineering*
Eric Li *Glenda Dawson HS (TX)*	Quantum Computing: Implementing Grover's Algorithm on IBM Q	**Dr. Tzu-Chieh Wei** *Physics & Astronomy*
Peter Li *Henry M. Gunn HS (CA)*	Learning Disentangled Representations of Facial Action Sequences using Convolutional Encoding-Decoding	**Dr. Dimitris Samaras** *Computer Science*

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Rachel Li *Spackenkill HS (NY)*	Structure-Based Design and Computational Analysis of Trisubstituted Benzimidazole FtsZ Inhibitors as Novel Antitubercular Agents	**Dr. Iwao Ojima** *Chemistry, Institute for Chemical Biology & Drug Discovery*
Virginia Ma *Columbus Academy (OH)*	Enabling Cell Deconvolution in Pancreatic Ductal Adenocarcinoma with Simulated Gene Expression	**Dr. Richard Moffitt** *Biomedical Informatics*
Sebastian Marin-Quiros *Lakeridge HS (OR)*	Maximum Power Point Tracking (MPPT) Controlled Buck Converter for a High Voltage Output Piezoelectric Footstep Harvester	**Dr. Ya S. Wang** *Mechanical Engineering*
Tyler Masuyama *Trinity School (NY)*	Evaluating Wastewater Treatment Plant Efficacy and Effluent Toxicity via Zebrafish Behavior and Gene Expression	**Dr. Anne McElroy** *School of Marine & Atmospheric Sciences*
Alexis McCauley-Pearl *Smithtown HS East (NY)*	Heavy Metal Ion Remediation from Contaminated Water Using Cellulose Nanofibers and Magnetic Nanoparticle Composite Prepared From Rice Husk	**Dr. Benjamin Hsiao** *Chemistry*
Tai Michaels *North Hollywood HS (CA)*	Activity of the Base Excision Repair Pathway in Differentiated and Proliferating Neural Cells	**Dr. Bruce Demple** *Pharmacological Sciences*
Pranati Modumudi *Evergreen Valley HS (CA)*	Modeling the Shapes of Central Cluster Galaxies as a Proxy for the Orientation of Dark Matter Halos	**Dr. Anja von der Linden** *Physics & Astronomy*
Aaron Ouyang *The College Preparatory School (CA)*	Developing a Novel Augmented Reality Videogame System as an Alternative Approach to Upper Limb Stroke Rehabilitation	**Dr. Mei Lin Chan** **Dr. Clinton Rubin** *Biomedical Engineering*
Arianna Pahlavan *Jericho HS (NY)*	Solving Heterogeneities in Defibrillation for a Vascular Remodel of the Heart	**Dr. James Glimm** *Applied Mathematics & Statistics*
David Rotunno *Earl L. Vandermeulen HS (NY)*	Real-time Face Recognition with Deep Learning	**Dr. Minh Hoai Nguyen** **Dr. Roy Shilkrot** *Computer Science*
Sagarika Samavedi *Interlake HS (WA)*	Effect of Mercury and Selenium on Oceanic Phytoplankton Growth	**Dr. Nicholas Fisher** *School of Marine & Atmospheric Sciences*
Julia Shen *Detroit County Day School (MI)*	Bidirectional Modulation of Compulsive Motor Behaviors in Mice by Stimulating Amygdalar Inputs to the Dorsolateral Striatum	**Dr. Joshua Plotkin** *Neurobiology & Behavior*
Samuel Shin *Stuyvesant HS (NY)*	Characterizing Medium Spiny Neurons in the Auditory Striatum	**Dr. Shaoyu Ge** **Dr. Qiaojie Xiong** *Neurobiology & Behavior*
Katie Sierra *Northport HS (NY)*	Effects of Multiple Stressors on Survivorship and Growth in Juvenile *Mytilus edulis*	**Dr. Dianna Padilla** *Ecology & Evolution*

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Megan Specht *Ward Melville HS (NY)*	Role of Vitamin E Isoforms (Alpha-/Delta-Tocopherol) and Folate in Racial Health Disparity: A Prospective Study Evaluating Association of p53	**Dr. Jennie Williams** *Family, Population & Preventative Medicine*
Seth Talyansky *Caitlin Gabel School (OR)*	Building a Computational Model of Aging in Visual Cortex	**Dr. Braden Brinkman** *Neurobiology & Behavior*
Neelay Trivedi *Watchung Hills Regional HS (NJ)*	Curvature and Adversarial Learning	**Dr. Romeil Sandhu** *Biomedical Informatics, Computer Science*
Neehal Tumma *Port Huron Northern HS (MI)*	Elucidating the Mechanism of Polymerization in *Porphyromonas gingivalis* Fimbriae Assembly	**Dr. David Thanassi** *Molecular Genetics & Microbiology*
Anna Tutuianu *LASA HS (TX)*	Combined Effects of Low Intensity Pulsed Ultrasound and Au-Shell/SPIO-Core Nanoparticle Treatment in Chondrogenic Stem Cell Differentiation	**Dr. Yi-Xian Qin** *Biomedical Engineering*
Kushal Upadhyay *Paul D. Schreiber HS (NY)*	An Empirical Study of a Deep Learning Method for Shadow Detection	**Dr. Minh Hoai Nguyen** *Computer Science*
Elizabeth Wang *Ward Melville HS (NY)*	A Co-Culture System to Assess the Effect of Cannabidiol on Neuronal-Microglial Signaling during Seizures	**Dr. Stella Tsirka** *Pharmacological Sciences*
Helen Wang *Glenda Dawson HS (TX)*	Elucidating Specific Domain Interaction between cyclic-di-GMP Signaling Processing Protein HaCE and H-NOX in *Agrobacterium vitis*	**Dr. Elizabeth Boon** *Chemistry*
Matthew Weltmann *Half Hollow Hills HS East (NY)*	Palbociclib Treated MDA-MB-231 Breast Cancer Cells Exhibit Increased Invasive Behavior in Zebrafish Xenograft Model	**Dr. Benjamin Martin** **Dr. David Q. Matus** *Biochemistry & Cell Biology*
David Wendt *Island Trees HS (NY)*	Understanding Electronic Structure in Liquid Xenon for Dark Matter Detection	**Dr. Marivi Fernandez-Serra** **Dr. Philip Allen** *Physics & Astronomy*
Vivek Yanamadula *Davidson Academy (NV)*	A Stochastic Mathematical Model for Protein Glycosylation in the ER	**Dr. David Green** *Applied Mathematics & Statistics*
Jerry Yang *Richard Montgomery HS (MD)*	Intragenic Complementation of *vps13* Mutants Provides Evidence of Dimerization in *S. cerevisiae*	**Dr. Aaron Neiman** *Biochemistry & Cell Biology*

Also featuring
Independent High School Research participant(s):

Haisam Amin *MDQ Academy, NY*	Changes in Vascular Endothelial Growth Factor Expression during Monocyte-to-Macrophage Differentiation	**Dr. Anne Hamik** *Cardiology/Department of Medicine*

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FACULTY MENTORS, 2018

Dr. Philip Allen, *Physics & Astronomy*

Dr. Elizabeth Boon, *Chemistry*

Dr. Braden Brinkman, *Neurobiology & Behavior*

Dr. Mei Lin Chan, *Biomedical Engineering*

Dr. Nilanjan Chakraborty, *Mechanical Engineering*

Dr. Brian Colle, *School of Marine & Atmospheric Sciences*

Dr. Jackie Collier, *School of Marine & Atmospheric Sciences*

Dr. Bruce Demple, *Pharmacological Sciences*

Dr. Tim Duong, *Radiology*

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