

SIMONS SUMMER RESEARCH PROGRAM

POSTER PRESENTATIONS, AUGUST 2017



Stony Brook
University

Programs for Research & Creative Activity
Stony Brook University

<u>Student Presenter(s)</u>	<u>Project Title</u>	<u>Mentor(s)</u>
Ayush Agarwal <i>Dougherty Valley HS (CA)</i>	Generative Adversarial Training on Synthetic Data for Large-Scale Histopathology Image Segmentation	Dr. Dimitris Samaras <i>Computer Science</i>
Irene Antony <i>Half Hollow Hills HS West (NY)</i>	Subchondral Bone Engineering: Regeneration of Cartilage-Bone Interface to Replace Knee Prosthetics	Dr. David Komatsu <i>Orthopaedics</i>
Mutahara Bhuiyan <i>Jericho HS (NY)</i>	Heavy Metal Ion Remediation via Nitrooxidized Cellulose Nanofibers	Dr. Benjamin Hsiao <i>Chemistry</i>
Adrian Chen <i>Great Neck South HS (NY)</i>	Peroxidase-Mediated Labeling of Periplasmic Proteins in Mycobacteria	Dr. Jessica Seeliger <i>Pharmacological Sciences</i>
Bethany Chen <i>Winston Churchill HS (MD)</i>	Targeting gC1qR with Novel anti-U937 Monoclonal Antibodies	Dr. Berhane Ghebrehiwet <i>Medicine</i>
Maggie Chen <i>Canyon Crest Academy (CA)</i>	Targeted Bone Regeneration: Gold Nanoparticles and Low Intensity Pulsed Ultrasound as Combinational Therapy for Osteogenic Stem Cell Differentiation	Dr. Yi-Xian Qin <i>Biomedical Engineering</i> Dr. Ya S. Wang <i>Mechanical Engineering</i>
Theresa Chen <i>Cranbrook Kingswood Upper School (MI)</i>	The Role of FHL2 in the Development of Adult-Born Hippocampal Neurons	Dr. Shaoyu Ge Dr. Qiaojie Xiong <i>Neurobiology & Behavior</i>
Caitlin Chou <i>Herricks HS (NY)</i>	A Mobile Platform for Natural Sound Recognition	Dr. Aruna Balusubramanian <i>Computer Science</i>
Brendon Choy <i>Hunter College HS (NY)</i>	Cutting off Cancer: Design and Synthesis of Novel Vascular Disrupting Agents	Dr. Iwao Ojima <i>Chemistry, Institute for Chemical Biology & Drug Discovery</i>
Hannah Cole <i>Newton South HS (MA)</i>	SR-18662: A Novel Compound that Inhibits Growth of Colorectal Cancer Xenografts	Dr. Vincent Yang Dr. Agnieszka Bialkowska <i>Medicine</i>
Peter Connors <i>The Harker School (CA)</i>	Potential Implications of Ocean Acidification on Bivalve Immunity and Energy Reserves	Dr. Bassem Allam <i>School of Marine & Atmospheric Sciences</i>
Eli Doyle <i>Earl L. Vandermeulen HS (NY)</i>	Effect of a Single Dielectric Layer Between Ferroelectric Films During Growth	Dr. Matthew Dawber <i>Physics & Astronomy</i>
Kathleen Esfahany <i>Ward Melville HS (NY)</i>	Population Decoding in Mouse Visual Cortex	Dr. Il Memming Park <i>Neurobiology & Behavior</i>
Ella Feiner <i>Horace Mann School (NY)</i>	Exploring Posterior Growth in <i>D. rerio</i> Using a Live Cell Cycle Biosensor	Dr. Benjamin Martin Dr. David Q. Matus <i>Biochemistry & Cell Biology</i>

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Nathan Geist <i>Knoxville Catholic HS (TN)</i>	Analysis of Aqueous NaCl Solutions through Molecular Dynamics Simulations	Dr. Philip Allen Dr. Marivi Fernandez-Serra <i>Physics & Astronomy</i>
Geoffrey Glass <i>Los Altos HS (CA)</i>	Meta-Salmon: Big Data Insights From Transcript-Level Quantification of Public RNA-seq Data	Dr. Robert Patro <i>Computer Science</i>
Jenny Huang <i>Montgomery HS (NJ)</i>	Transcriptomic Changes in Crohn's Disease-associated Adherent-Invasive <i>Escherichia coli</i> strain LF82 during Invasion of Intestinal Epithelial Cells	Dr. Ellen Li <i>Medicine</i>
Neha Hulkund <i>Tesla STEM HS (WA)</i>	A Deep Learning Approach to Multiple Sclerosis MRI Lesion Segmentation	Dr. Tim Duong <i>Radiology</i>
Raphael Iskra <i>Commack HS (NY)</i>	The Effects of Nitazoxanide on the Chaperone/Usher Pathway	Dr. David Thanassi <i>Physiology & Biophysics</i>
Julie Jones <i>The Pembroke Hill School (KS)</i>	Modeling Particle Selection in the Suspension-Feeding Bivalves, <i>Mercenaria mercenaria</i> and <i>Argopecten irradians</i>	Dr. Emmanuelle Pales Espinosa <i>School of Marine & Atmospheric Sciences</i>
Alexander Ke <i>North Hollywood HS (CA)</i>	Microvascular and Neuronal Dynamics of SPIO-Au Nanoparticle Transport	Dr. Ya S. Wang <i>Mechanical Engineering</i>
Kavya Kopparapu <i>Thomas Jefferson HS for Science & Technology (VA)</i>	Automatic Necrosis Segmentation from Glioblastoma Whole Slide Images using Deep Learning	Dr. Fusheng Wang <i>Biomedical Informatics, Computer Science</i>
Jessica Li <i>The Pingry School (NJ)</i>	Design, Synthesis, and SAR Study of Novel FABP Inhibitors as Anti-Inflammatory and Anti-Nociceptive Drugs	Dr. Iwao Ojima <i>Chemistry, Institute for Chemical Biology & Drug Discovery</i>
Tiffany Liu <i>The College Preparatory School (CA)</i>	Peak and Location Detection of Synaptically Evoked Dendritic Calcium Signals Using Automated Image Processing of Acute Coronal Brain Slices	Dr. Joshua Plotkin <i>Neurobiology & Behavior</i>
Chiu Fan Bown (Leo) Lo <i>Jericho Senior HS (NY)</i>	Numerical Modeling of Scattering Scanning Near-Field Optical Microscopy on Phonon Resonances in Silica and Sapphire	Dr. Mengkun Liu <i>Physics & Astronomy</i>
Angelyn Loh <i>Herricks Senior HS (NY)</i>	The Role of VSS Complex in Balancing the PI Levels of Prospore Membranes for Sporulation in <i>Saccharomyces cerevisiae</i>	Dr. Aaron Neiman <i>Biochemistry & Cell Biology</i>
Thomas McGee <i>Cold Spring Harbor HS (NY)</i>	The Effects of Optogenetic Stimulation of Basolateral Amygdala Terminals in the Dorsal Striatum and its Implications in Obsessive-Compulsive Disorder in Mice	Dr. Joshua Plotkin <i>Neurobiology & Behavior</i>
Nicole Meister <i>Centennial HS (MD)</i>	Improving Robustness of the NLS-II X-ray Scattering Image Neural Network with Data Augmentation	Dr. Dantong Yu <i>Electrical & Computer Engineering & BNL</i>

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Aaron Min <i>Smithtown HS East (NY)</i>	Furfuryl Alcohol Dehydration Reaction over Aluminum and Titanium Oxide Supported Tungsten Oxide Catalysts	Dr. Taejin Kim <i>Materials Science & Chemical Engineering</i>
Jake Nieto <i>Commack HS (NY)</i>	<i>In Silico</i> Analysis of Bioactive Ligand Binding to Human Liver Fatty Acid Binding Protein (FABP1)	Dr. Steven Glynn <i>Biochemistry & Cell Biology</i>
Kyanna Ouyang <i>Ridge HS (NJ)</i>	Effects of Neutral Ceramidase Inhibition by C ₆ Urea-ceramide in Intestinal Epithelial Cells Transformed with Oncogenic PI3K	Dr. Yusuf Hannun <i>SB Cancer Center</i>
Charles Pan <i>Newark Academy (NJ)</i>	Analysis of In-Situ X-Ray Diffraction Data of Growing BTO/PTO Heterostructures	Dr. Matthew Dawber <i>Physics & Astronomy</i>
Jennifer Pan <i>Arnold O. Beckman HS (CA)</i>	Protein Folding Pathways from an Accelerated <i>in silico</i> Approach Combining Broad General Knowledge with Detailed Atomistic Physical Models	Dr. Ken Dill <i>Laufer Center</i>
William Peng <i>Manhasset HS (NY)</i>	Exploring Color Confinement and Hadronization in Quantum Chromodynamics (QCD) through Semi-Inclusive Deep Inelastic Scattering	Dr. Abhay Deshpande Dr. Nils Feege <i>Physics & Astronomy</i>
Kyle Pilotti <i>Sanford Calhoun HS (NY)</i>	Predicted and Observed Wind Profiles over Southampton, NY	Dr. Brian Colle <i>School of Marine & Atmospheric Sciences</i>
Sneha Ramshanker <i>American School of Warsaw, Poland</i>	Analysing the Effect of Second and Third Order Chromatic Dispersion on Ultrafast Laser Pulses for Applications in High Speed Lock-in Spectroscopy	Dr. Thomas Allison <i>Chemistry, Physics & Astronomy</i>
Sikata Sengupta <i>Ridge HS (NJ)</i>	Supervised and Unsupervised Methods for Exploring User Stances and Preferences	Dr. Niranjan Balusubramanian <i>Computer Science</i>
Katharine Shao <i>Detroit Country Day School (MI)</i>	Investigating the Effect of Low Intensity Vibration on the Inflammatory Response of Pre-adipocytes	Dr. Clinton Rubin, Dr. Mei Lin Chan <i>Biomedical Engineering</i>
Aditya Sidapara <i>BASIS Scottsdale HS (AZ)</i>	NucleoVec: a Natural Language Processing-inspired Framework for Nucleotide Sequence Analysis using Vector Space Models and Machine Learning	Dr. Thomas MacCarthy <i>Applied Mathematics & Statistics</i>
Gilbert Spencer <i>Half Hollow Hills HS West (NY)</i>	A Novel Method to Deconvolute the Ice Core Record of Carbon Dioxide	Dr. John Mak <i>School of Marine & Atmospheric Sciences</i>
Kenneth Stier <i>Bergen County Academies (NJ)</i>	Characterization C1q and gC1qR Expression in MSTO Mesothelioma Cells for Targeted Therapies	Dr. Berhane Ghebrehiwet <i>Medicine</i>
Annie Sui <i>Hunter College HS (NY)</i>	Constructing <i>Burkholderia cepacia</i> Complex Strains to Express mCherry for <i>in situ</i> Imaging during Infection	Dr. James Bliska <i>Molecular Genetics & Microbiology</i>

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Shobhita Sundaram <i>Greenwich HS (CT)</i>	Elucidating the Impact of Mutations on Protein-DNA Binding Using Molecular Dynamics Simulations	Dr. Carlos Simmerling <i>Chemistry</i>
Nathan White <i>North Hollywood HS (CA)</i>	BatTracker: Precise Infrastructure Free 3D Positioning of Mobile Devices	Dr. Fan Ye <i>Electrical & Computer Engineering</i>
Brandon Wong <i>Bergen County Academies (NJ)</i>	Stress Relaxation of Swine Femoral Articular Cartilage in Confined Compression and Indentation	Dr. Yi-Xian Qin <i>Biomedical Engineering</i>
Michelle Xu <i>Arnold O. Beckman HS (CA)</i>	Towards <i>de novo</i> Design of Protein-Peptide Interactions: Assessing Peptide Binding Site Specificities	Dr. Dima Kozakov <i>Institute for Advanced Computation Science</i>
Sherry Xu <i>Troy HS (CA)</i>	Intraspecific Genome Size Variation in <i>Draba verna</i>	Dr. Jesse Hollister <i>Ecology & Evolution</i>
Andrew Wu* Spackenkill HS (NY) <i>*Independent HS Research</i>	Developing Motion-Controlled Video Games as an Alternative Approach to Stroke Rehabilitation Therapy	Dr. Clinton Rubin, Dr. Mei Lin Chan <i>Biomedical Engineering</i>
Jason Yang <i>West Windsor-Plainsboro HS North (NJ)</i>	Using Evoked Responses to Assess Forelimb Recovery following Cervical Spinal Cord Injury in Rats	Dr. Prithvi Shah <i>Health & Rehabilitation Sciences</i>
Andre Yin <i>Westview HS (CA)</i>	Desalination with Thin-film Nanocomposite Membranes	Dr. Benjamin Hsiao <i>Chemistry</i>
Justin Zhang <i>Thomas Jefferson HS for Science & Technology (VA)</i>	Automated Hand Detection in Video with Deep Learning	Dr. Minh Hoai Nguyen <i>Computer Science</i>

Acknowledgements

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Karen Kernan, Director, Simons Summer Research Program

Brian Frank, Staff Assistant

About the Simons Summer Research Program

The Simons Program enables academically talented high school students to come to Stony Brook University for a summer to engage in scientific research. Simons Fellows work with distinguished faculty mentors, learn laboratory techniques and tools, become part of active research teams, and experience life at a research university. Today's reception recognizes the students and the faculty with whom they work. The Simons Program is supported by the Simons Foundation and individual faculty grants, and is administered by Programs for Research and Creative Activity.

For more information, call 631.632.7114.

Simons Summer Research Program website:

<http://stonybrook.edu/simons>

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FACULTY MENTORS, 2017

- Dr. Bassam Allam, *School of Marine & Atmospheric Sciences*
- Dr. Philip Allen, *Physics & Astronomy*
- Dr. Thomas Allison, *Chemistry, Physics & Astronomy*
- Dr. Aruna Balusubramanian, *Computer Science*
- Dr. Niranjana Balusubramanian, *Computer Science*
- Dr. Agnieszka Bialkowska, *Medicine*
- Dr. James Bliska, *Molecular Genetics & Microbiology*
- Dr. Mei Lin Chan, *Biomedical Engineering*
- Dr. Brian Colle, *School of Marine & Atmospheric Sciences*
- Dr. Matthew Dawber, *Physics & Astronomy*
- Dr. Abhay Deshpande, *Physics & Astronomy*
- Dr. Ken Dill, *Laufer Center*
- Dr. Tim Duong, *Radiology*
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- Dr. Marivi Fernandez-Serra, *Physics & Astronomy*
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- Dr. Yusuf Hannun, *Stony Brook Cancer Center*
- Dr. Jesse Hollister, *Ecology & Evolution*
- Dr. Benjamin Hsiao, *Chemistry*
- Dr. Taejin Kim, *Materials Science & Engineering*
- Dr. David Komatsu, *Orthopaedics*
- Dr. Dima Kozakov, *Applied Mathematics & Statistics, Inst. for Advanced Computational Science*
- Dr. Ellen Li, *Medicine*
- Dr. Mengkun Liu, *Physics & Astronomy*
- Dr. Thomas MacCarthy, *Applied Mathematics & Statistics*
- Dr. John Mak, *School of Marine & Atmospheric Sciences*
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