

# Andrew Liang

(925) 214-8888 | [aliang@thecollegepreparatoryschool.org](mailto:aliang@thecollegepreparatoryschool.org) | <https://www.andrewliang.info>

## EDUCATION

### The College Preparatory School, Oakland, CA, 2019–Present

**Inducted into the National Cum Laude Society** (2021–2022)

- 12th Grade, ongoing  
Advanced Debate (A), AP Physics C (A), Archeology, Astronomy, Compass 12 (P), English Seminars IV: Deadliest Catches (A), Math 6: Multivariable Calculus (A), Modern Middle Eastern History (A), RHF Outside Activity (P), STEM Research Part II (A), 20th Century Black Society & Culture (A)
- 11th Grade  
Advanced Debate (A/A), AP Calculus BC (A/A–), AP Chemistry (A/A–), AP Statistics (A–/A), Drawing and Design (A/A), English Seminars III: Canon and Challenge | London Calling (A/B), STEM Research Part I (A), U.S. History–AP level (A/A)
- 10th Grade  
Beginning/Intermediate Debate (A/A), Dance (A–/A), Honors Chemistry (A/A), Honors English II (A/A), Honors Math 4AB: Precalculus (A/A), Honors Spanish III (A/A), Honors The Atlantic World (A/A), Wellness & Decision Making (P)

### Junior Academy of Global STEM Alliance, The New York Academy of Sciences, New York, NY, 2020–Present

- **Young Member**, 2020–Present
- Competitor, The Future of Telemedicine Challenge, “TECHNOVATION– Development of WEB–Based Remote Disease’s Diagnosis and Monitoring Platform: a Pilot Study of Predicting Neurodegenerative Disorders Using Machine–Learning Modeling of Sporadic Eye Movement Data” ([bit.ly/AL\\_8](https://bit.ly/AL_8)), 7–student–mentor team, 2021
- Participant, 10 Clinical Research Seminars

### Mission San Jose High School, Fremont, CA, 2018–2019

- 9th Grade (**GPA 4.0** unweighted)  
Civics (A+), Geometry/Algebra 2/Trigonometry (A/A–), Health (A–), Honors English 9 (A/A), Living Earth–Biology (A/A), Physical Education (A–/A), Spanish 3 (A/A–)

### Haiao Chinese Academy, Fremont, CA, 2018–2019

- 9th Grade  
AP Chinese (A+/A+)

## SUMMER PROGRAMS

## STANDARDIZED TESTS

### SAT

10th Grade, October 2019

- Composite Score **1580**  
Math 800  
Reading/Writing 780
- Essay 6/6/7

### PSAT

**Semifinalist, National Merit Scholarship Program**

11th Grade, January 2021

- Composite Score **1510**  
Math 760  
Reading/Writing 750
- NMSC Index 226

### SAT Subject

9th Grade, June 2019

- Biology E 780

### Advanced Placement

**AP Scholar with Distinction Award** (2020–2021)

11th Grade, 2021

- AP Calculus BC 4  
Calculus AB Subscore 5
- AP Chemistry 5
- AP Drawing 4
- AP Statistics 5
- AP United States History 5

10th Grade, 2020

- AP Macroeconomics 5
- AP Microeconomics 5
- AP Psychology 4

9th Grade, 2019

- AP Biology 5
- AP Chinese Language and Composition 5

## OLYMPIAD STEM

## Department of Chemistry, Department of Materials Science & Engineering, University of California Berkeley, Berkeley, CA, June-July 2021

STEM Research Program, College Preparatory School, Oakland, CA

- Intern, Advisor: Dr. Ting Xu, Ph.D., professor, received training and supported ongoing research: Rational Design of Random Polymers for Protein Folding and Stabilization Utilizing GROMACS Molecular Dynamics Simulations, 4-intern-graduate-faculty project team, 5 hours/week

## Fremont STEM Academics, Fremont, CA, May-July 2020

Summer Session, Aspiring Scholars Directed Research Program

- Student Researcher, original research: in silico and in vitro HOMO-LUMO differential analysis of solvatochromic compounds, 7-student-mentor team, 20 hours/week

## Online Camp, The Debate Institutes at Dartmouth, Hanover, NH, June-July 2020

DDIX, Policy Debate Program

- Student, intensive skills work and daily practice, 50 hours/week
- 2nd Place, 2-student team, Policy Debate, Final Camp Tournament

## Stanford Medicine, Stanford University, Stanford, CA, July-August 2019

Clinical Neuroscience Immersion Experience, Department of Psychiatry and Behavioral Sciences

- **Project Lead**, "AI-Based Diagnosis and Treatment System Using Repeated Transcranial Magnetic Stimulation for Post-Traumatic Stress Disorder" ([bit.ly/AL\\_101](https://bit.ly/AL_101)), 4-student team, 25 hours/week
- Participant, 8 clinical research seminars, 20 hours/week

## Medical Immersion Summer Academy, Highland Hospital and Samuel Merritt University, Oakland, CA, July 2019

Summer Program

- Mentee, a level-1 trauma center shadowing, 5+ clinical research seminars, medical techniques training: biopsy, CPR, EKG, laboratory blood tests, suture skills and ultrasound ([bit.ly/AL\\_102](https://bit.ly/AL_102)), 40 hours/week

## PUBLICATIONS

**Liang, Andrew** "Identification of SARS-CoV-2 Main Protease Inhibitors Utilizing Michael Acceptor Warheads.", *Junior Science and Humanities Symposium (JSHS)*, 2021. ([bit.ly/AL\\_0056](https://bit.ly/AL_0056))

Sun, Stephanie; Kavya, Anand; Ashok, Ishani; Ashok, Bhavesh; Bajaj, Ayush; Beldona, Varsha; Chattopadhyay, Kushal; Kwan, Audrey; Mageswaran, Karankumar; Surapaneni, Anvi; Surapaneni, Atri; Verma, Pranjal; Chen, Allen; Kolala, Ria; **Liang, Andrew**; Poosarla, Ayeeshi; Premnath, Krithikaa; Sri Indran, Karthikha; Wu Jeslyn; Yuvaraj, Aishwarya; Raj, Harsha; Sathish,

## COMPETITIONS

### USA Biolympiad, Center for Excellence in Education

- **Qualifier | Participant** Semifinal Examination, 2021
- **Semifinalist**, Open Examination, 2021

### British Biology Olympiad, UK Biology Competitions

- **Gold Medal (top 5%)**, Percentage Score 80.53% (cutoff: 64.77%), 2021

### U.S. National Chemistry Olympiad, American Chemical Society, California Section

- **Waitlisted** for National Chemistry Olympiad Examination
- Participant, California Section Examination, 2021

### USA Computing Olympiad

- Silver Division, January, February 2021
- Bronze Division, December 2020

### American Mathematics Competitions (AMCs), Mathematical Association of America

- **Qualifier | Participant**, American Invitational Mathematics Examination (**AIME**), Score 8 (out of 15), **USAJMO Index 206**, 2019
- Distinguished Honor Roll, AMC 10 A, 2019; AMC 8, 2017
- Honor Roll, AMC 10 B, 2019; AMC 8, 2016, 2015
- **First Place AMC 8**

Tanish; Shah, Aashi; Su, Sarah; Tran, Kara; Njoo, Edward "Reactivity guided de novo molecular design and high throughput virtual screening of a targeted library of peptidomimetic compounds reveals charge-based structure-activity relationship of potential covalent inhibitor of SARS-CoV-2.", *Journal of Student Research*, 2020, 9(2), 1082. ([bit.ly/AL\\_0028](https://bit.ly/AL_0028))

Chen, Allen; Poosarla, Ayeeshi; Mageswaran, Karan; Rajasekhar, Anushka; Fu, Brian; **Liang, Andrew**; Tran, Kara; Njoo, Edward "Spectroscopic Kinetic Monitoring and Molecular Dynamics Simulations of Biocatalytic Ester Hydrolysis in Non-Aqueous Solvent.", *Journal of Emerging Investigators*, 2020, VOL 2 (2). ([bit.ly/AL\\_0037](https://bit.ly/AL_0037))

Chen, Allen; Poosarla, Ayeeshi; **Liang, Andrew**; Njoo, Edward "Tracking Enzymatic Hydrolysis of an Amide Bond Using Highly Simplified 4-nitroanilide Colorimetric Substrates." manuscript accepted, *National High School Journal of Science*, 2020. ([bit.ly/AL\\_0020](https://bit.ly/AL_0020))

Chen, Allen; Fu, Brian; **Liang, Andrew**; Mageswaran, Karankumar; Poosarla, Ayeeshi; Njoo, Edward "β-Lactam Antibiotics: The Past, Present, and Future." manuscript accepted, *National High School Journal of Science*, 2020. ([bit.ly/AL\\_0022](https://bit.ly/AL_0022))

Ashok, Bhavesh; Bajaj, Ayush; Adwankar, Rohan; Surapaneni, Atri; Surapaneni, Anvi; Chen, Allen; Sun, Stephanie; Chattopadhyay, Kushal; Wu, Jeslyn; **Liang, Andrew**; Poosarla, Ayeeshi; Mageswaran, Karankumar; Rao, Isha; Kharshingher, Sania; Booma, Sushruth; Njoo, Edward; Downing, Robert "Pharmacophore-based screening and identification of molecular level descriptors applied to non-nucleoside reverse transcriptase inhibitors (NNRTIs)." manuscript in review, *National High School Journal of Science*, 2020. ([bit.ly/AL\\_0018](https://bit.ly/AL_0018))

Chen, Allen; Poosarla, Ayeeshi; **Liang, Andrew**; Rajasekhar, Anushka; Mageswaran, Karan; Fu, Brian; Tran, Kara; Njoo, Edward "Protease Final Report." unpublished work, 2020. ([bit.ly/AL\\_00005](https://bit.ly/AL_00005))

## EXTRACURRICULAR STEM EXPERIENCE

### COVID-19 | Drug Discovery | Biochemistry | Biomedical Research, 2019–Present

**Independent Researcher**, Advisor: Dr. Alden Blair, Ph.D., University of California San Francisco, San Francisco, CA, September 2020–Present

- Selective modeling of known SARS-CoV-2 Main Protease inhibitors based on vinyl sulfonates for potential COVID-19 drugs ([bit.ly/AL\\_107](https://bit.ly/AL_107))
- In silico screening of existing antiviral S-glycoprotein inhibitors for potential treatment on SARS-Cov-2
- 10 hours/week

**Founder | Lead Researcher | Organizer and Lead Presenter**, Aspiring Scientist Research Club, College Preparatory School, Oakland, CA, May 2020–Present ([bit.ly/AL\\_103](https://bit.ly/AL_103))

- Virtual screening of vinylsulfonate ester-based **COVID-19** main protease inhibitors, 5-student team

**Winner**, the highest score in school, 2015

### Math Madness, AreteLabs

- **1st Place**, 11-student team, Division 2B, 2019

## SCIENCE AND INNOVATION COMPETITIONS

### Conrad Innovation Challenge International

- **Qualifier | Participant**, **Conrad Virtual Innovation Summit**, 2021
- **Finalist** ([link](#)), Conrad Innovation Challenge 2nd Round, Health and Nutrition, 2020–2021
- **Co-founder**, 3-student team
- SPECULA - Virtual Reality Eye Tracker Using Computer Deep Vision and Machine Learning Modeling for Neurodegenerative Disease Diagnosis ([bit.ly/AL\\_9](https://bit.ly/AL_9), [bit.ly/AL\\_0045](https://bit.ly/AL_0045))

### BioGENEius Challenges

- **Qualifier | Participant**, **U.S. International BioGENEius Challenge**, 2021
- **Finalist | 2nd Place**, Recognition Award: **\$1,000**, Global Healthcare Challenge Category, the Bay Area BioGENEius Challenge, 2021
- Identification Of SARS-CoV-2 Main Protease Inhibitors Utilizing Michael

- Host monthly 45-min lectures based on self-designed curriculum introducing advanced biomedical topics through exploring real-life implications, 10-20 attendees
- 2.5 hours/week

**Student Researcher**, Academic Year Session, Fremont STEM Academics, Fremont, CA, August 2019-May 2020

- Synthesis of novel  $\beta$ -lactam antibiotics, 8-student-mentor team ([bit.ly/AL\\_0025](https://bit.ly/AL_0025) [0:10-0:53, 3:53-4:53, 11:59-12:51])
- Literature review:  $\beta$ -lactam antibiotics, 5-student-mentor team
- Virtual screening of **SARS-CoV-2** inhibitors, 26-student-mentor team ([bit.ly/AL\\_0026](https://bit.ly/AL_0026) [4:28-5:30, 6:13-6:38])
- Tracking enzymatic hydrolysis of an amide bond using highly simplified 4-nitroanilide colorimetric substrates, 4-student mentor team
- Monitoring and molecular dynamics simulations of ester hydrolysis in non-aqueous solvent, 8-student-mentor team
- Development of a machine learning platform for computer-guided design and rapid screening of small molecule antivirals targeting HIV and SARS-CoV-2, 17-student-mentor team ([bit.ly/AL\\_0027](https://bit.ly/AL_0027) [6:17-6:55])
- 15 hours/week

## Science Bowl, 2018-Present

**Founder | Captain**, College Preparatory School Team, Oakland, CA, 2019-Present; Member, Mission San Jose High School Team, Fremont, CA, 2018-2019 ([bit.ly/AL\\_108](https://bit.ly/AL_108))

- Competitor, won 3/5 rounds, 4-student team, Bay Area Regional High School Science Bowl Competition, March 2020
- Biology, chemistry, and math, 8-student team, 1 hour/week

## Science Olympiad, 2019-Present

**Biology Section Leader** | Competitor, College Preparatory School Team, Oakland, CA

- 6th place (out of 50+), 2-student team, Virology individual event; 13th place (out of 50+), 2-student team, Chemistry Lab individual event, Boyceville miniSO Invitational Tournament (Div. C), online, November 2020
- 7th place (out of 100+), 3-student team, Codbusters individual event, BEARSO Invitational Tournament, online, October 2020
- 12th place (out of 60+), 2-student team, Designer genes individual event, Bay Area Regional Science Olympiad Tournament, CA, February 2020
- Protein modeling, physiology and engineering, 20-30- student team, 1.5 hours/week

## Robotics Club, 2019-Present

**Co-Leader**, College Preparatory School, Oakland, CA, 1 hour/week

Acceptor Warheads  
([bit.ly/AL\\_107](https://bit.ly/AL_107))

## Junior Science and Humanities Symposium (JSHS)

- **Semifinalist** (top 12 in region), Biomedical Sciences, Molecular and Cellular, Northern California & Western Nevada Regional JSHS, February 2021
- Identification of SARS-CoV-2 Main Protease Inhibitors Utilizing Michael Acceptor Warheads ([bit.ly/AL\\_0054](https://bit.ly/AL_0054), [bit.ly/AL\\_0056](https://bit.ly/AL_0056))

## Contra Costa County Science and Engineering Fair

- **2nd Place**, Biology, March 2021
- Identification Of SARS-CoV-2 Main Protease Inhibitors Utilizing Michael Acceptor Warheads ([bit.ly/AL\\_0058](https://bit.ly/AL_0058), [bit.ly/AL\\_112](https://bit.ly/AL_112))

## Diamond Challenge

- Qualifier | Participant, 2nd round, 2020-2021
- Co-founder, 3-student team
- SPECULA - A Novel Approach Towards Combating Neurodegenerative Diseases ([bit.ly/AL\\_0053](https://bit.ly/AL_0053), [bit.ly/AL\\_0048](https://bit.ly/AL_0048))

## Alameda County Science and Engineering Fair

- 4th Place,

## Math Club, 2016–2019

Member | Competitor, College Preparatory School, Oakland, CA, 2019; Mission San Jose High School, Fremont, CA, 2018–2019; William Hopkins Junior High School, Fremont, CA, 2016–2018

- Competition math (details in STEM COMPETITIONS on page 1), 5 hours/week

## EXTRACURRICULAR NON-STEM EXPERIENCE

### Debate, 2016–Present

Member | Competitor, Debate Team, College Preparatory School, Oakland, CA, 7 hours/week, 2019–Present; Mission San Jose High School, Fremont, CA, 4 hours/week, 2018–2019

- **Semifinalist, bid to the Tournament of Champions**, Varsity, Policy Debate, **National**, Peninsula Invitational, CA, 2022
- **Octafinalist**, Varsity, Policy Debate, National, Gonzaga University the Conway Classic, CA, 2022
- Winning record, Varsity, Policy Debate, Local, GGSA debate 2, CA, 2021
- Participant, Varsity, Policy Debate, **National**, Cal Invitational, CA, 2021
- **1st Place Speaker Award**, Junior Varsity, Policy Debate, **National**, Cal Invitational, CA, 2020
- **2nd Place Speaker Award, 2nd Place**, 2-student team, Novice, Policy Debate, Regional, HDSHC Invitational, Tempe, AZ, 2020
- Participant, Varsity, Policy Debate, **National**, National Speech and Debate Season Opener, Lexington, KY, 2020
- Participant, Varsity, Policy Debate, **National**, New York City Invitational Debate and Speech Tournament, Bronx, NY, 2020
- **1st Place**, 2-student team, Novice, Policy Debate, State, SCU Dempsey Cronin Invitational, Santa Clara, CA, 2019
- **1st Place**, 2-student team, Novice, Policy Debate, Local, Golden Gate Speech Association Tournament, Oakland, CA, 2019

Student | Competitor; Beginner, Intermediate/Advanced; Public Forum Debate, Impromptu Speech, The Golden State Academy, Fremont, CA, 7 hours/week, 2016–2018

- 2nd Place, 2-student team, Public Forum Debate, Final Summer Camp Tournament, The Golden State Academy, Fremont, CA, 2017
- Competitor, 2-student team, Public Forum Debate, Local, Middle School Speech and Debate Fall Classic, San Francisco, CA, 2016

### Past, Present and Future: Andy See the World, 2021–Present

- **Self-Initiated Youtuber**
- To raise awareness, particularly amongst immigrant communities, of historical racism in America by contributing holistic evidence quantifying and tracing the lasting socioeconomic impacts of slavery and antiblackness, 30+ hours

Biochemistry|Microbiology|Molecular Biology, March 2020

- 3-student team
- “Moles Per Hour: Determining Enzyme Kinetics of Various Serine Proteases Using 4-nitroanilide Colorimetric Substrates” ([bit.ly/AL\\_00006](http://bit.ly/AL_00006))

## CERTIFICATES

**Cardiopulmonary Resuscitation (CPR), EMS Safety, 2019–Present**

**Bloodborne Pathogen (BBP), National CPR Foundation, 2019–Present**

## LABORATORY SKILLS

### Proficient

- Column/Thin Layer Chromatography
- Density Function Theory Calculations (DFT)
- Dissection (vertebrae and invertebrate)
- Fourier-transform Infrared Spectroscopy (FTIR)
- Light Microscopy
- Michaelis-Menton/Beer's Law Graphs - Enzyme Kinetics
- Molecular Docking
- Molecular Dynamics Simulations
- Northern Blotting
- Nuclear Magnetic Resonance (NMR)
- Polyacrylamide/DNA Gel Electrophoresis
- Polymerase Chain Reaction (PCR)
- Rotary Evaporator

## STATISTICAL DATA



- [bit.ly/AL\\_0030](http://bit.ly/AL_0030)

## VOLUNTEER EXPERIENCE

### Online English Tutoring Program, Build Our Bridges Academy (BOBA), [bobtutor.org](http://bobtutor.org), June 2021-Present

- **English Program Leader** | Tutor, 20-tutor-student-team
- Plan/organize weekly lessons to 12 grade 1-10 students in China; monitor 8 tutors to ensure quality; recruit/train new tutors; assess English level of new students upon their entry
- Participate monthly leadership meeting to discuss updates, issues, and design curriculum with BOBA executives
- 50+ hours, 2 hours/week

### WeCare COVID-19 Support Community, Oakland, CA, May 2020-Present

- **Founder** | **Coordinator** | Member, 12 members ([bit.ly/AL\\_111](http://bit.ly/AL_111))
- Raised/Donated: \$780, **6,000 surgical masks**, **3,059 home-made masks**, **300 face shields** to 10 homeless shelters, 7 senior centers, 7 hospitals, 8 grocery stores and The MasksNOW coalition, 100+ hours, 5 hours/week

### Partners Program, College Preparatory School, Oakland, CA, 2019 - Present

- One-on-one tutor, 1 underserved middle school student, STEM subjects, 50+ hours, 1 hour/week during school year

### Bioscience-Badminton Coach Project, San Francisco, CA, 2018-2019

- **Founder** | **Instructor**
- 9 special education high school students, group lesson, badminton, and sport-related biomedical science, 20+ hours, 2 hours/month

### Webadminton Fall/Summer Charity Tournaments, California Badminton Academy, Fremont, CA, 2018/2019

- Committee Member, 31-member-team, 42 hours
- Organized/hosted the tournaments, raised \$4,574 for UNICEF USA ([nicefusa.org](http://nicefusa.org)) and PPIE ([ppie.org](http://ppie.org))

### MATHCOUNT TEAM, Mission San Jose Elementary, Fremont, CA, 2018-2019

- **Coach**, 27 sixth graders, competition math, 70+ hours, 2+ hours/week during school year
- 4th place, team, MATHCOUNT Elementary School Chapter Competition, Fremont, CA, February 2019

### Relay for Life, Mission San Jose High School Sub-Group, American Cancer Society, Fremont, CA, 2018-2019

- Member, raised \$200, 24 hours

## ANALYSIS

### Proficient

- Student's  $t$ -test, ANOVA, contingency tables, chi-square and z tests, linear regression, graphing categorical and quantitative data

### Novice

- Multivariate regression modeling
- Experimental and observational study designs, sampling and simulation

## ART

### Drawing, 2008-Present

#### Avid Freelance Artist

([bit.ly/AL\\_106](http://bit.ly/AL_106))

- **Selected artist** (total 45 artists selected in Bay Area), Mid-Autumn Festival San Francisco Bay Area Artists Works Exhibition, San Francisco, CA, September 2021

### Student

- Study with Master Louis Fu-Chu Chan, Evergreen Art Studio Fremont, CA, 2015-Present
- Studied at US Arts Education Center, San Diego, CA; Y. Wu Studio, Fremont, CA, 2008-2014

## SPORTS

### Badminton, 2011-Present

**National Seed Player**, USA Badminton Junior Ranking, TEAM USA ([bit.ly/AL\\_105](http://bit.ly/AL_105))

- **U.S. Top 3**, Under 15,

## Science Bowl, Mission San Jose High School, Fremont, CA, June-August 2019

- Tutor, 18 rising freshmen, biology, school team try-out, 16 hours

## WORK EXPERIENCE

### EastBay Badminton Association, Emeryville, CA, June 2021-Present

- Assistant Coach, training fee waiver
- 20 5-14 year old students, beginner class, 4 hours/week

### California Badminton Academy, Fremont, CA, June-July 2019

- Assistant Coach, \$17/hour
- 15 elementary school students, beginner class, 4 hours/week

## PROGRAMMING

### Proficient

- JAVA

### Intermediate

- Python, R

### Novice

- SAS

## FOREIGN LANGUAGES

### Mandarin

- Native Proficiency, spoken and written
- Freelance Writer, \$7-\$10 each, 700-800 words, 5 nonfiction stories, World Journal ([worldjournal.com](http://worldjournal.com)), 2013-Present

### Spanish

- Minimum Professional Proficiency, spoken and written

## PROFESSIONAL MEMBERSHIP

### Explorer Membership, Sigma Xi-The Scientific Research Honor Society, February 2021-Present

Boy-Double, Weeks 1-2, 7, 2018

- **U.S. Top 4-6**, Under 15, Boy-Double, Weeks 1-39, 2018; Weeks 46-52, 2017

### National Competitor

- **Qualifier**, Under 15; **Bronze**, Under 13; Mix-Double, **Pan American Junior Badminton Championships**, Badminton Pan American Confederation, 2017, 2016
- **13-time Gold, 14-time Silver, 21-time Bronze, 27-time 4-8th Place**; Boy-Single, Boy-Double, Mix-Double; **50+** international, national and regional tournaments, 2011-2021