# Anika Singh

11204 Ladera Vista Dr
Austin, TX 78759
anikasingh2001@gmail.com
512-968-0991 (m), 512-342-9206 (home)

## EDUCATION

08/15 – 06/19 **Liberal Arts and Science Academy (LASA)** Austin, Texas

Weighted GPA 4.46/4
Graduating with Foundation Program with Distinguished Level of Achievement and Magnet Endorsement
SAT II Math II: 800

AP Exams Calculus BC: 5, World History: 5, US History: 5, Human Geography: 5, English Language & Composition: 4

**AP and Honors Courses Taken:**

AP Calculus BC
AP Physics C
AP Physics 1 & 2
AP Computer Science
AP Statistics
Linear Algebra
AP Chemistry
AP Microeconomics
AP US History
AP World History
AP Psychology
AP Government
AP Human Geography
AP English Literature & Composition
AP English Language & Composition

## RESEARCH/ INTERNSHIP

9th - 11th **iGEM (International Genetically Engineered Machine) Team** 8 Hrs/Week 30 Weeks/Yr

*Technical Leader (Ellington Lab, UT Austin)*

- Constructed a unique DNA circuit system focused on producing and regulating L-DOPA (a precursor to Dopamine) in E.coli for Parkinson's patients
- Published and designed biological parts and contributed them to the iGEM registry for other synthetic biology researchers

- Developed the project website for iGEM judges and biotech companies (http://2017.igem.org/Team:Austin_UTexas_LASA)
- Taught lab procedures to new team members

11th - 12th **Silicon Labs Inc., Austin** 6 Hrs/Week
*High School Intern* 8 Weeks/Yr

- Learned from Silicon Labs engineers on semiconductors basics, technology trends, and Silicon Labs products
- Gained hands-on experience in several topics like speaker drivers, radio communication, soldering basics, sensors, etc.
- Built gadgets using soldering techniques and built circuit boards for speaker systems

11th - 12th **Ekerdt Chemical Engineering Lab at the University of Texas, Austin** 16 Hrs/Week
8 Weeks/Yr
*Research Assistant*

- Grew Tin Oxide thin films using selective atomic layer deposition (ALD) techniques to make microelectronic devices more effective
- Used X-Ray Reflectivity (XRR), Atomic Force Microscopy (AFM), and X-ray Photoelectron Spectroscopy (XPS) to analyze data
- Presented research at a workshop to students and professors

9th - 11th **Plant Science Lab at the University of Texas, Austin** 32 Hrs/Week
*Research Assistant* 10 Weeks/Yr

- Experimented on the effects of different molar concentrations of extracellular ATP on stomatal aperture for further research in developing plants resistant to climate changes
- Conducted statistical analysis on data collected using R programming
- Mentored new students on the project, lab procedures, and analyzing their data

## ACTIVITIES

11th - 12th **LASA National Honor Society** 2 Hrs/Week
*Student Member* 30 Weeks/Year

- Participated in several community service events organized by NHS
- Attended NHS meetings which provide information on volunteering opportunities, fundraising, and hours tracking

| | | |
|---|---|---|
| 10th | **Austin Energy Science Fair** | 8 Hrs/Week |
| | *Student Participant* | 2 Weeks/Yr |

- Identifying pathways used by eATP signaling in a plant (Arabidopsis Thaliana) for further work in genetically modifying crops to be more resistant to environmental factors
- Analyzed up and down regulated genes using bioinformatic techniques in R such as heat maps and volcano plots
- Used DAVID (Database for Annotation, Visualization and Integrated Discovery) database to find pathways involved in regulating stomatal aperture in response to extracellular ATP

| | | |
|---|---|---|
| 12th | **LASA Diversity Council** | 1 Hrs/Week |
| | *Student Committee Chair* | 30 Weeks/Yr |

- Led weekly meetings concerning topics on diversity and inclusion of minorities at LASA
- Hosted cultural day and monthly minority awareness days along with guest speakers to introduce new cultures to LASA

| | | |
|---|---|---|
| 11th | **C++ Cryptography Tool** | 4 Hrs/Week |
| | *Programmer* | 8 Weeks/Yr |

- Built a cryptography library using C++ including methods of encryption and decryption using various cipher algorithms
- Developed a graphical user interface (GUI) which encrypts and decrypts user documents

| | | |
|---|---|---|
| 9th-10th | **LASA Model United Nations** | 3 Hrs/Week |
| | *Student Member* | 4 Weeks/Yr |

- Attended Model UN conferences which simulate inner workings of United Nations
- Participated in debates on current affairs by representing different countries

| | | |
|---|---|---|
| 9th - 10th | **LASA Science Olympiad** | 2 Hrs/Week |
| | *Student Member* | 10 Weeks/Yr |

- Participated in science competitions which tested in knowledge of various disciplines including engineering, biology, and physics

- Built Robotic Arm using VEX robotics kit and researched Invasive Species and Water Quality events

10th **Parkinson's Film Series** 2 Hrs/Week 5 Weeks/Yr
- Created film series featuring Parkinson's patients and illustrated details of the disease
- Interviewed patients and learned about their routine to ease their symptoms

## VOLUNTEERING

9th - 10th **Austin Public Library** 4 Hrs/Week 20 Weeks/Yr
- Assisted the librarian in managing various tasks in the youth section
- Organized youth outreach to provide underrepresented students an outlet for their interests
- Designed robotics workshops to garner interest in the STEM field

11th **Chemistry Tutoring** 1 Hrs/Week 15 Weeks/Yr
- Tutored pre-AP chemistry students during school hours
- Worked through homework problems and created practice questions for pre-AP students

10th - 11th **Power for Parkinson's Volunteer** 1.5 Hrs/Week 4 Weeks/Yr
- Assisted Parkinson's patients during the exercise sessions
- Talked and interviewed patients about Parkinson disease and made aware of our research work in alleviating symptoms of the disease

10th – 11th **Synthetic Biology Awareness and Fundraising** 4 Hrs/Week 4 Weeks/Yr
- Led a team of students to talk to the public face to face about what synthetic biology is and how to use it ethically
- Held session at the Thinkery Children's Museum about GMOs and ethically using synthetic biology

11th **Marathons for Cancer research** 6 Hrs/Week 2 Weeks/Yr
- Helped set up the marathons devoted to raising money for cancer research

## HONORS & AWARDS

11th **iGEM Boston 2017 Bronze Medal**

- International synthetic biology competition which brings predominantly undergraduate students from over 45 countries
- Presented our research work and results on using synthetic biology to create a multi plasmid system and alleviate the symptoms of Parkinson's disease to judges
- Created and displayed research poster

10th, 11th **NCWIT (National Center for Women & Information Technology) National Honorable Mention and Austin Winner**

- A national award given for demonstrating leadership in promoting and contributing to computing and research-based practices
- Built website to inform the public about research in Parkinson's and presented the research to school
- Provided training on lab procedures and taught R programming to new students joining the Plant Science research lab at UT Austin
- Given to approximately 300 out of 4,000 applicants

10th, 11th **Austin Independent School District (AISD) Trustee Award**

- Given to the top 10% students of each class in the year in AISD

11th **AP Scholars with Distinction**

- Given to students who received 3 or above on 5 or more exams and an average score of 3.5 or above

9th **National Spanish Exam Honorable Mention**

- Measures Spanish audio and written abilities

## SKILLS, TALENTS & ACHIEVEMENTS

11th **C++ Programming Language + Data Structures**

- Expertise in C++ programming and concepts like classes, pointers, memory management, strings and object-oriented features
- Detail knowledge on commonly used data structures in programming like arrays, linked lists, hash tables, stacks, queues, trees etc
- Github URL (https://github.com/Anika-Singh)

10th - 11th **R (Statistical Computing Programming Language)**

- Learned various features of R regarding data load and cleaning, data normalization, visualizations using r-plots
- Used these features to analyze the gene expression of genes when stomata are exposed to the extracellular ATP and find the pathways involved in this process

10th- 11th **Web Programming**

- Building web pages using HTML, styling using CSS stylesheets and data validations using javascript
- Learned libraries like Bootstrap to create fluid page designs and used these skills to build a wiki for iGEM project and showcase our research in Parkinson's to researchers and companies

10th -11th **Java Programming Language**

- Learned to write code including classes, recursive methods, and algorithms
- Created ciphers to encode and decode documents

9th **Adobe Certified Associate** (in Print & Digital Media Publication Using Adobe InDesign)

- Design and layout for creating print
- Experienced designing magazine layouts

**Languages: Spanish, Hindi**

- Fluent in Hindi
- Intermediate proficiency after four years of Spanish curriculum

9th **Violin**

- Part of high school orchestra team
- Playing violin since 5th grade
- Played in small groups at the Austin Public Library during the holidays