Julia Camacho

Texas Academy of Mathematics and Science

Incoming MIT Freshman

My Experience in STEM

Elementary School (MN)
- accelerated program in Minnesota enabled me to take Algebra in 5th grade
- won regional Math Masters competition

Middle School (MN + Schimelpfenig)
- competed in MN High School Math League
- started competing in science fairs (regional and state)
- took Algebra II & Precalc at Jasper

9th Grade (Jasper High School)
- 800 on SAT Math
- took Calculus at Jasper
- started participating in USABO

10th Grade (Jasper High School)
- served as Biology Club President at Jasper
- founded SparkSTEM, a nonprofit org
- summer: began bioinformatics research at TAMS/UNT

11th Grade (TAMS)
- competed in Science Olympiad
- qualified for TXSEF for first time
- 4th place in category at ISEF
- 800 on SAT Math II and Biology

12th Grade (TAMS)
- 1st place in category at TJAS
- served as TAMS Research Organization executive and Artificial Intelligence Society VP
- qualified for USABO semifinals
- won NCWIT Aspirations in Computing national award

Building a Strong Foundation in STEM

Takes patience and perseverance...

- Exploration is key!
  - Don't settle on something you're not truly interested in
  - Interests may change
- Self-studying
  - Find the joy in learning
  - Make it fun! Reading, creating your own projects, etc.
- Make learning and curiosity a habit
  - Learn, don't just study
  - Use free time wisely: explore areas of STEM that you aren't normally able to pursue at school

Finding a STEM Passion

Since elementary school, I've been interested in both computer science and biology...

Computer science + biology = computational biology!

You don't have to stick to only one traditional field of STEM... combine all your interests and come up with something more unique.

Don't feel pressured to do something because it seems like that's what will bring you the most "success."

Build your own learning experience around what you're truly interested in!

STEM College Courses I Took at TAMS

TAMS enables students to take semester-long college courses at the University of North Texas:

11th Grade:

- Calculus II
- Applied Statistics
- Computer Science I
- Honors General Chemistry I & II
- Honors Biology I & II
- Special Problems (research)

12th Grade:

- Multivariable Calculus
- Linear Algebra
- Physics (Mechanics and E&M)
- Science, Technology, and Society (philosophy course)
- Special Problems (research)

Math is the backbone of computational science.
I took multiple upper-level math courses to gain a solid foundation in statistics and computational math!

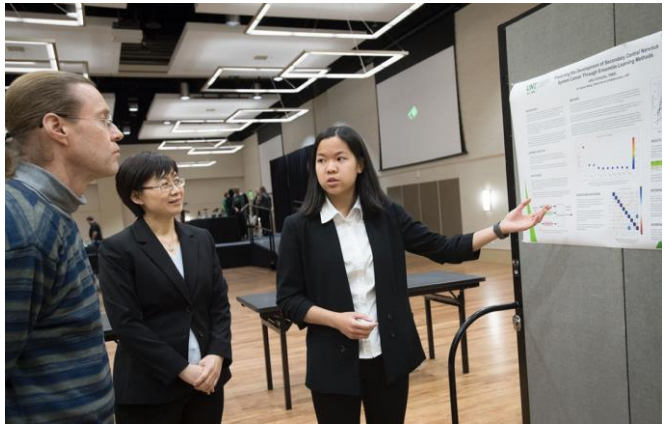
Research & Science Fair: More than just science!

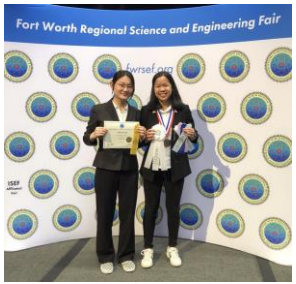
I started competing in **science fairs** in middle school & began working in a **research laboratory** at TAMS/UNT the summer after my sophomore year.

Research helped me to develop critical thinking skills & resourcefulness.

Research opportunities are all around you: summer programs, nearby universities (sometimes), even just online (CS & data science projects!)

You can reach out to older students for advice if you can't find a mentor.





Research & Science Fair: More than just science!

Truly don’t focus on winning—focus on your own learning & growth instead.

Beyond just researching and competing, science fair builds:

- Presentation skills
- Strong relationships with like-minded students
- Grit and resilience

“Don't aim at success... For success, like happiness, cannot be pursued; it must ensue... Success will follow you precisely because you had forgotten to think about it.”

–Viktor Frankl

Research Competitions

Middle School:

- School/regional fairs
- Broadcom MASTERS

High School:

- ISEF-affiliated fairs
- Regeneron Science Talent Search
- Texas Junior Academy of Science
- Texas Junior Science and Humanities Symposium
- Davidson Fellows Scholarship
- Google Science Fair

SPARKSTEM

I founded SparkSTEM during my sophomore year at Jasper High School & served as president until last month

Aim: to harness community interest in STEM to help underprivileged students around the state

Learn more at **sparkstem.org**

one of our science fair seminars!

CS/CBIO Resources & Competitions

Getting started with computer science / data science & comp bio:

- Coursera/Udacity/Udemy courses
- Kaggle.com
- Codewars.com
- Rosalind.info

Competitions:

- USACO and USABO
- For girls: NCWIT Aspirations in Computing Award

AI for Aspiring Researchers

Online program being held this summer for high school students interested in machine learning & artificial intelligence!

Created by the founders of TAMS Artificial Intelligence Society

Goal: to teach fundamental computational math & algorithmic thinking

Enroll/learn more at aspiringai.com!

STEM School Organizations & Summer Programs

Use clubs and organizations to build connections with fellow students who share your interests!

My School Organizations:

Biology Club at Jasper
- Served as President during 10th grade

Research Organization at TAMS
- Served as Director of Competitions during 12th grade

Artificial Intelligence Society at TAMS
- Served as Vice President during 12th grade

Summer Program Examples:

STARS UT Southwestern Medical Center

Johns Hopkins Center for Talented Youth

UNT

SSP The Summer Science Program

UTD

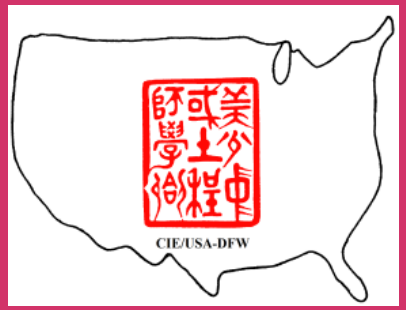
RSI Research Science Institute

Forming Your Own STEM Vision

Think about what you'd ideally love to create or see in the world...
Then do what it takes to get there!

- Take courses that build your knowledge in that area
- Join clubs and participate in extracurriculars that you're genuinely interested in
- Work on passion projects and start your own initiatives / organizations (this also happens to be what distinguishes you in college applications)

Don't be afraid to just start!
We're all beginners in the beginning :)



Thank you!

jcamac@mit.edu