

# Tvarita Mathur

(720) 595-9671 | [mathurtvarita@gmail.com](mailto:mathurtvarita@gmail.com)

## EDUCATION

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### Fairview High School

Boulder, CO

W GPA: 4.69/5.0 UW GPA: 3.8/4.0

Expected Graduation : 2027

Relevant Coursework already completed: Pre IB Biology, IB Chemistry, AP Computer Science Principles (Python), AP Computer Science A(Java), AP Calculus AB

Current year courses: AP Calculus BC, IB Physics, AP Statistics, AP Language and Composition, AP Psychology, IB Spanish 4

## RESEARCH & LABORATORY EXPERIENCE

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### Dr. Vernery's Soft Matter Mechanics Lab, CU Boulder

May 2025- present

- Conducted independent research on fungal hyphae growth behaviour, developing original hypotheses about environmental factors affecting growth patterns
- Utilized laboratory techniques including sterile cultivation methods, micropipetting, and precision microscopy for quantitative growth measurements
- Captured and analyzed microscopy images to quantify growth, demonstrating proficiency in scientific documentation and data collection

### Dr. DeSouza's Integrative Vascular Biology Laboratory, CU Boulder

May 2025-present

- Performed advanced cellular manipulation techniques in controlled environments, including feeding, splitting and pharmacological treatment of cell cultures under fume hood conditions
- Conducted statistical analysis on experimental data to identify significant patterns and physiological responses

### Independent Science Fair Research Project

October 2025-present

- Developed original hypothesis studying applications of transient network theory to biological systems
- Designed and executed independent experiments in laboratory setting, demonstrating ability to translate theoretical concepts into testable hypotheses
- Performed statistical analysis on experimental data and drew evidence-based conclusions presenting findings in formal science fair format

## STEM LEADERSHIP & COMPETITION

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### Fairview Formula 1 club

2024 - Present

#### Founder & President

- Founded integrating physics, engineering, and aerodynamic principles with real-world racing applications
- Organize STEM learning activities focused on materials science, aerodynamics and biomechanics in motorsport
- Led fundraising efforts for Mission 44, promoting equal STEM opportunities for students worldwide

### Fairview Science Olympiad

2022- Present

#### Co-President (present) Vice President(2025-2026), Captain (2024-2025)

- **4th place in Anatomy and Physiology at state level** - demonstrated mastery of human body systems, physiological processes, and medical terminology
- Contributed to 6th place overall team finish at 2025 state competition through expertise in biological sciences
- Led team preparation sessions on cellular biology, genetics, and anatomical systems

### Altona Middle School Science Olympiad

2022-Present

#### Volunteer

- Coached team to 5th place overall finish at regional competition, demonstrating effective teaching and mentorship abilities
- Developed age-appropriate curriculum materials covering fundamentals biology concepts for middle school students
- Mentored junior members in laboratory techniques, scientific methodology, and critical thinking skills

### Mathnasium Learning Center

2021-2024

#### Volunteer

- Tutored students in mathematics, statistics, and quantitative analysis skills essential for scientific research
- Adapted teaching methods in diverse learning styles, developing communication skills valuable for collaborative research

## SPORTS

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## Fairview Track & Field

2021-Present

- Balanced competitive athletics with academic excellence, exemplifying discipline and time management

## ADVOCACY & LEADERSHIP

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### Research Intern for Representative Eliza Hamrick, Colorado General Assembly Feb 2025-Present

- Conducting research and draft legislative improvements to the Colorado READ Act, as shown in this [document](#), for better accommodations for students with reading disabilities.
- Shadow Representative at Colorado State Capital, observing legislative processes and policy development firsthand

### Colorado Gifted and Talented Student Board 2024-Present

- Drafted and proposed education legislation to state legislators at the Colorado State Capitol, advocating for improved GT program
- Presented testimony to education reform bills to support their passage, developing public speaking and policy advocacy skills

### BVSD Gifted and Talented Youth Council

#### Leader 2023-present

- Collaborated with district administration and educational leader to enhance STEM program offerings and resources
- Participated in curriculum development discussions for advanced biology and chemistry courses

## SKILLS & INTERESTS

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NHD state qualifier- 1st at school level; 2nd at regionals

AP Scholar with Distinction

National Honor Society member

Concurrent enrollment at FRCC: Economics and Java courses

**Laboratory Skills:** Scientific methodology, data collection and analysis, scientific writing

**Languages:** English (Native), Hindi (Native), Spanish (professional fluency)

**Research interests:** Anatomy & Physiology, Biomedical Engineering, Genetics