

ABHIJEET GHOSH

Walton High School, Marietta, Georgia

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CAREER OBJECTIVE

Driven biomedical and chemical engineering researcher and STEM innovator. Combines advanced laboratory research, engineering design, advanced technology, and community leadership to solve global challenges!

EDUCATION

Senior in the Walton High School **Biomedical STEM program**. Completed following relevant STEM courses with an overall GPA of 4.670 (unweighted 4.000): AP Chemistry; Honors Anatomy; Principles of Biomedical Science; AP Biology; Medical Interventions; AP Seminar; SAT score: 1580

WALTON HIGH SCHOOL AWARDS: Earned the following awards from 9th to 11th grade.

- 2025 Rensselaer Polytechnic Book Award for outstanding achievement in math and science, including a \$40,000 per year merit scholarship for four years.
- 2025 Principal's Award (honors top two students in the grade academically)
- Fall 2024 Raider Pride Award– recognizing students who exemplify integrity, kindness, respect, and school pride.
- 2023 Outstanding in Biology Award
- Top of the class in STEM classes every semester (2022-2025)

EXTRACURRICULAR ACTIVITIES / AWARDS / HONORS

RESEARCH: SCIENCE AND ENGINEERING FAIR (2019-2026)

Principal Investigator for Research and Engineering Projects	Nanoparticle-Antibiotic Complexes to combat Antibiotic Resistance (2025-26)– IN PROGRESS research to synthesize antibiotics conjugated with nanoparticles. Effects tested <i>in vitro</i> in <i>E. coli</i> and <i>in vivo</i> with <i>C. elegans</i> .
	Gold Nanoparticles in Medicine: Anti-cancer Study (2024-25)– investigated how surface coatings and sizes of gold nanoparticles affect cytotoxicity against cancer cells. Guided by Dr. D'Souza (Mercer), Dr. Giver (Emory), Dr. Baruah (Kennesaw State, KSU), and Dr. Link & Mrs. Hendricks (Walton High School).
	Toxicity of Silver Nanoparticles in <i>E. coli</i> and <i>D. melanogaster</i> (2023-24)– Studied how modifying silver nanoparticle properties affects toxicity across microbes and complex organisms to inform antimicrobial and therapeutic applications, under the guidance of Dr. Baruah and Mrs. Hendricks.
	Smart Irrigation and Plant Monitoring with AI & IoT (2022-23)– investigated the effectiveness of internet-of-things (IoT) and artificial-intelligence (AI), to address the problem of inefficient crop irrigation. Designed a smart system to automatically irrigate plants based on sensor data and camera-based AI.
	Artificial Intelligence on Guard: Making Drivers Safer (2020-21)– Designed a device to detect drowsy and distracted driving investigating use of AI, face detection, face point mapping, and emotion recognition, to increase drivers' safety.
Honors and Awards	Recycling with AI and Robotics (2019-2020)– Designed a robot using AI to detect and sort recyclables, reducing contamination and hazardous manual sorting.
	Broadcom MASTERS Finalist (national competition: https://www.societyforscience.org/broadcom-masters/index/2020-finalists/)
	GSEF Overall– 1 st honors & best in category (2025, 2021); 2 nd honors (2020); Department of Defense STEM Leadership award (2021); 1st Place Cobb-Paulding Regional Winner → State Qualifier (2019–25). Cobb-Paulding Regional Science Fair– Overall Winner (2020, 2021); Yale Science and Engineering Award (2021)

PUBLICATIONS AND PRESENTATIONS

Peer-Reviewed Publications	Ghosh, Abhijeet (2025). <i>Investigating toxicity and properties of silver nanoparticles in Escherichia coli and Drosophila melanogaster</i> . Accepted for publication at Journal of Emerging Investigators.
	Ghosh, Abhijeet (2025). <i>Gold Nanoparticles in Medicine: A Multifaceted Study Into Anti-cancer Properties</i> . Under review at Columbia Junior Science Journal.
Georgia Junior Science & Humanities Symposium (JSHS)	Ghosh, Abhijeet (2025). <i>Investigating toxicity and properties of silver nanoparticles in Escherichia coli and Drosophila melanogaster</i> . Department of Defense sponsored program, University of Georgia, February 2025. Presentation award – Top 10 out of 50 selected projects.

GA GOVERNOR'S HONORS PROGRAM (GHP) 2025

	■ Completed competitive 4-week summer program majoring in Biology with minor in International Relations.
	■ Research project: “ Quantification of Dermal Uptake of Plant-Based Carbon Dots in Lumbricus terrestris ”. Synthesized carbon dots from low-cost orange peel waste. Demonstrated their high rate of transdermal absorption and utility in the field of nanomedicine and fluorescence imaging. Ended with a publication and poster presentation.

SCIENCE OLYMPIAD (2019-2025)

Events	Anatomy (grades 6 th -12 th); Disease Detectives / Epidemiology (6 th -12 th); Heredity (6 th -7 th); Robot Tour (10 th -12 th); Material Science (11 th -12 th); It's About Time (9 th); Circuit Lab (12 th)
Awards	Nationals 2025 – Anatomy 14 th ; Epidemiology 9 th 2022 – Anatomy 17 th ; Epidemiology 8 th States (qualified every year) – 1 st and 2 nd in every event in 2025

MATH TEAM (2019-2025)

■ American Regions Mathematics League (ARML) competitor – top 30 students representing Georgia nationally (2025) ■ Georgia State Tournament – top 4 students at Walton (2025) ■ American Invitational Mathematics Examination (AIME II 2025)– Score: 5 ■ Top 25% at University of GA competition (2023) ■ AMC 10– top 3 at Walton High School as a middle schooler (2022) ■ AMC 8 Honor Roll – top 5% nationally (2021, 2022) ■ Top 20 in MathCounts State competition (2022)
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CHEMISTRY OLYMPIAD (2024-2025)

■ US National Chemistry Olympiad 2025 qualifier (2nd in GA with 53/60 in local exam)– 12 qualified for nationals from GA ■ 2024 Local exam: scored 42/60 points
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LEADERSHIP / COMMUNITY ENGAGEMENT (2022-2026)

Abhijeet Ghosh Free Tutoring for All Inc.	■ Founded non-profit 501(c)(3) to provide free tutoring services via tutoring.abhijeetghosh.com ■ 200+ hours of independent tutoring. Test & AP/finals review sessions; Math, Science, Coding. Tutored middle schoolers in the community.
Tutoring (other)	■ Tutored an international student from June to August 2024 via American Assimilation Helpline ■ Tutor students in biology and chemistry via Walton Science National Honors Society (SNHS)
Walton Science Olympiad (SO) Executive Board Member and Officer	■ <i>Vice-Captain, Walton SO (2025–26)</i>: Lead 68+ students across 23 events. ■ <i>Event Leader, Robot Tour (2025–26)</i>: Coach team in designing and building a top-performing robot for National Science Olympiad. ■ <i>Event Leader, Anatomy & Physiology (2023–25)</i>: Developed college-level content, taught, reviewed, and guided students through practice tests. <i>Officer, Testing Coordinator, (11th grade, 2023–24)</i>: Taught self-study strategies, “how to learn” and assigned practice tests to 65+ students across four teams. <i>Officer, Build-it-Boss (10th grade, 2022-23)</i>: Mentored students to enhance brainstorming and problem-solving to optimize build’s performance. <i>Event Supervisor, Dodgen-Walton Invitational (2023–25)</i>: Authored and graded tests, supervised competition day, and co-authored Disease Detectives tests.
Math Team Officer	Responsibilities: coaching, creating lessons, and preparing practice sets for junior varsity team members.
Student Government Association	Class President (2023-present). Lead 639 students. Serve as liaison to administration, assist with shaping/modifying/reviewing school policies. Led anti-bullying campaign, 1500-can food drive, and annual parade. Manager & designer of homecoming float (ranked as #1).

WORK EXPERIENCE / COMMUNITY SERVICE

Laboratory: Biological	■ Bacteria: Plating, identification, testing growth via Kirby-Bauer (zone of inhibition) and other methods. ■ <i>D. melanogaster</i>: Growth and maintenance, identifying males and females, anesthetizing them using cold ■ Growing mammalian cancer cell lines (Mercer, Emory)
Laboratory: Material Science	■ Synthesis of silver nanoparticles with both plant-derived and citrate-based surface coatings ■ Synthesis of gold nanoparticles with citrate, glucose, and plant-based surface coatings ■ Deposition of Iodine in Silver Nanoparticle and Metal Organic Frameworks (KSU 2024 internship)
Immersion/ Observer ship	■ Volunteer at East Cobb Islamic Center Free Clinic helping serve the underserved community. I provide vitals, triage, and records support for uninsured patients and coordinate with physicians. ■ 100 hours of surgical observation at Wellstar Kennestone (2025). Time was split between outpatient pediatric surgery and clinic, emergency general surgery (including rounding), and robotic surgery. ■ 40 hours of clinical experience at Grady Hospital (2025). Included neurosurgery, burn unit, ER, EMT, oncology, ICU. ■ Shadowed an immunologist, nephrologist, and orthopedic surgeon in summer 2024

SKILLS

Research	My research skills encompass conducting literature reviews, performing data analysis, executing laboratory work, maintaining ethical awareness, and disseminating study findings through poster presentations at state-level science fair competitions.
Problem Solving	Competitiveness drives my focus, diligence, and continuous learning. I have a natural talent for memorization, enabling me to accurately recall detailed information. Challenges invigorate my passion, and my interests, hard work, focus, and commitment to learning make me adept at problem solving.
Technology	Skilled coder in python3. I am familiar with object detection AI training, internet of things configuration, microelectronics, and embedded systems design. I am also familiar with creating GUI software.
Teamwork	I excel in collaborative environments, capitalizing on the unique strengths and expertise of each team member to reach common goals. Valuing the synergy of teamwork, I foster a welcoming and inclusive atmosphere within the team. Consistently dependable, I honor my commitments and carry out my duties diligently. Timeliness and accountability are hallmarks of my approach, ensuring that tasks are completed promptly and with ownership. Drawing from years of participation in activities like Science Olympiad since childhood, I understand the transformative power of effective collaboration in driving innovation and project advancement. Together, we amplify our potential, achieving extraordinary results through collective vision and solidarity.

CHARACTER TRAIT

Competitive	I thrive on healthy competition, using challenges as catalysts for my personal growth and unwavering commitment to exceed established benchmarks.
Diligence and rigor	I prioritize integrity and ethics in all my endeavors, guiding my actions with diligence and care. Through conscientiousness and discipline, I consistently achieve goals and strive to surpass expectations. My meticulous attention to detail and organizational skills ensure tasks are executed accurately and efficiently.
Self-discipline	I appreciate the beauty of self-discipline as this character trait of mine helps me to stay focused on tasks, resist temptations, and persevere through challenges, even when faced with obstacles or distractions.
Wide and deep Knowledgebase	I am passionate about learning - finding excitement in academic pursuits. Problem-solving and critical thinking provide me with the satisfaction of applying acquired knowledge.
Determined	With my determination to become a doctor since my 2 nd grade, I love to embrace setbacks and learn from failures. Failures act as opportunities for learning and growth; and hard work and perseverance are my fuel to consistently move in the direction of success.