

ARYA TULSYAN

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EDUCATION

Jamnabai Narsee International School

International Baccalaureate Diploma Programme

Middle Years Programme

2009 – Present

2022 – Present

2015 – 2022

STANDARDIZED TESTS

ACT : 35/36

2022

TOEFL : 117/120

2023

ACADEMIC AWARDS & HONORS

School

Excellence in academics for ranking 1st among 88 students with 42/42 IB points in Grade 11

2023

Subject achievement – Ranked 1st in Chemistry HL, English SL & Spanish SL in Grade 11

2023

Achieved the Highest School Score in MYP Grade 10 for Spanish, Extended Mathematics & Digital Design

2021

Received Best Pupil Award amongst 90 students in Grade 10

2021

International

Secured the British Gold Crest Award for Research on PEGylation of a recombinant Human Fab' Fragment

2023

Received distinction in Sir Isaac Newton, a global physics examination

2023

Received distinction in all CEMC (CSMC, FERMAT, PASCAL) Exams, a set of global mathematics examinations

2019 - 2023

Distinction in Avogadro's Number, a global chemistry examination

2023

Distinction (Top 5%) in MAA - American Mathematics Competition 12 (AMC 12)

2022

ENGINEERING RESEARCH AND EXPERIENCE

Research

British Crest Award – Gold Awarded for meeting 15/15 criteria for research on Development of a Human Fab' fragment for treating Rheumatoid Arthritis

2023

- Developed a cost-effective treatment solution for the treatment of RA and other TNF related disorders
- Conjugation with PEG of the TNF α binding antibody fragment (Fab') to improve the serum half-life

2022 – 2023

Cambrian Bioworks, Bangalore India (<https://cambrianbioworks.com/>) builds smart, enabling technologies for scientists who build breakthroughs for medical diagnostics, chemical synthesis, bioresearch and automation

Research Paper under Vaibhav Hegde, CEO to evaluate economically viable ways to recycle enzymes for degradation of PET

- Conducted research and cost analysis of PET degradation and recycling procedures
- Researched and analyzed current challenges in enzymatic degradation processes of PET
- Recommended a magnetic bead based system to recycle PETases for optimal degradation of PET

Internships

BioConcept Ltd., Basel Switzerland (<https://www.bioconcept.ch/de/about-us/what-we-do/>) develops and manufactures customized cell culture media as well as chemically defined media for recombination protein production

2023

Summer Internship under Dr. Rainer Liebetanz, Director Research & Development

- Assisted in production of powder and liquid cell culture media including preparation, bottling and quality control
- Successfully conducted sterility tests, assessing fungal and bacterial growth for quality control of liquid media
- Gained hands-on experience in cell culture, working with various cell types including Chinese Hamster Ovary (CHO) cells
- Participated in the preparation of a clean room and learned how to maintain a sterile environment

IIT Kanpur, India

2022 – 2023

Apcegen Technologies, a company based in IIT Kanpur is focussed on the development of affordable recombinant therapeutics aimed to combat diseases like Rheumatoid Arthritis and Cancers.

Research Internship under Dr. Ashutosh Vyas

- Worked in a team of 4 scientists to evaluate the development of recombinant Human Fab' fragment
- Researched and executed a successful strategy to pegylate the recombinant Human Fab' fragment
- Used analytical techniques like SDS PAGE & HPLC to establish product quality of PEGylated Fab' fragment
- Recommended in vivo efficacy of the PEGylated Fab' fragment to prove actual biological activity

Learnings and Observations

Zelle Biotechnology Pvt. Ltd., Mumbai India (<https://zellebiotech.com/>)

2020 – 2023

Zelle Research and Analytical Services is a GLP certified state of the art laboratory engaged in developing and characterizing biosimilars

Trainee under Dr. Fatima D'Souza, COO

- Observed the entire life cycle of a biosimilar from development to comparability for final release into regulated markets
- Observed Mass Spectrometry, Differential Scanning Calorimetry, Circular Dichroism for comparability of Biosimilars
- Learned accurate use of the micropipette, weighing balance and pH meters and applied this for buffer preparation
- Followed cell culture techniques in a clean room environment & observed a cell based bioassay for an Anti-TNF α molecule
- Learned basic techniques for preparing and running SDS PAGE gels for protein separation

Trainee under Anurag Tulsyan, Managing Director

- Effectively observed and gained a thorough understanding of PCR based techniques employed for detection of COVID19
- Researched the use of colorimetric LAMP assay as an innovative point of care diagnostic tool for rapid and accurate detection of COVID19 during the pandemic. Suggested the extrapolation of the LAMP assay for other diseases as well

Trainee under Dr. S. Ravi Kumar

- Observed the development and small scale production of the enzyme L-Asparaginase in E. coli
- Learned tests involved in lot release testing of L-Asparaginase which included pH, solubility, protein content and purity
- Applied previous knowledge to support characterization of L-Asparaginase using SDS PAGE

WATER CONSERVATION & RECYCLING INITIATIVE

Refill to Regrow (<https://refill2regrow.com/>) represents an innovative initiative aimed at curbing plastic bottle usage through partnerships with corporate organizations. By advocating the adoption of stainless steel bottles, this initiative not only contributes to the conservation of water resources but also makes a significant environmental impact. Additionally, for every stainless steel bottle sold, a tree is planted, marking a ground breaking endeavor in environmental conservation & sustainability

2022 onwards

- Accomplished the transition from single-use plastic bottles to stainless steel alternatives across more than 20 major corporate entities and initiated 2000 tree plantations in the Sunderbans pioneering conservation of the environment
- 20 companies have made a substantial commitment to procure in excess of 15,000 stainless steel bottles within the next 10 months. This resolute commitment will serve as the catalyst for planting an equivalent number of trees in rural India, symbolizing a profound convergence of corporate responsibility
- 12 corporates have pledged to procure stainless steel bottles on an ongoing basis for each new employee they onboard

Ecotopia

2019 – 2022

Led a team of 23 members to reduce the uptake of single use plastic in the local area and minimise the need for plastics by finding alternate materials

- Created a cost benefit analysis on different types cutlery alternatives for the school canteen and replaced the cutlery in the school canteen with an optimal alternative
- Initiated the collection of plastic in the local area and sent it to a NGO for the creation of Eco Bricks
- Proposed to make Zelle Biotechnology Pvt. Ltd. A waste free zone and commenced regular plastic collection and recycling through the same NGO

SCHOOL LEADERSHIP

IYC Global Media Consortium Chairman

2023

Led a committee of 20 individuals across 2 days engaging in dynamic press conferences and intense discussions

Jannabai Adolescent Mentor (JAM)

2019 – 2023

Provided motivation and emotional support to peers and juniors through the most challenging years at JNIS

Mahatma Gandhi House Captain and Vice-Captain

2019 – 2021

Motivated and piloted a group of 40 colleagues and juniors to win 6 out of 7 interhouse events

Heal Our Planet Earth (HOPE) Global Event – Room Leader

2022 – 2023

Conducted a global competition across 13 countries showcasing the power of Photography in delivering a message

RESEARCH PURSUITS

Statistical Analysis

2023

Women's Premier League Research Paper: Used statistical analysis to project the potential league income and salaries of WPL players in the next 5 years based on data from the Indian Premier League

Mathematics Extended Essay: Applied a range of analytical approaches involving complex trigonometry and Jacobian matrices to interpret the game of billiards through Alhazen's Problem and improve gameplay strategies

2023

Mathematics Internal Assessment: Developed a Prey-Predator Model using the Runge-Kutta Method to solve differential equations to understand the population demographics and interaction between cheetahs and gazelles

Physics Internal Assessment: Tested a range of shutter speeds, exploring the physics of the camera, to evaluate its role in the development of motion blur and its application in the field of wildlife photography

2023

Chemistry Internal Assessment: Analyzed the impact of the pH of the sucrose solution on its hydrolysis catalyzed by invertase in order to understand the optimal pH for gastric acids to prevent spike in glucose

2023

OTHER COURSES

Outlier – Received the highest grade possible (Grade A) for the credit course Introduction to Statistics from Outlier showcasing a strong grasp of statistical concepts

2023

AI Veritas – Excelled in the AI Veritas course, mastering advanced concepts & its application in chemical engineering processes

2023

PHOTOGRAPHY

SOLARIZ Studios (<http://solarizstudios.com>) – Elevated 14 upcoming businesses through pro bono product photography services as head of SOLARIZ Studios, an independently created photography brand envisioned in the pandemic

2020 onwards

Delved into the intricacies of trick photography, unveiling its artistry in the Advanced Photography Course led by Girish Menon

2020 – 2021

Explored camera functions & its diverse applications in various contexts during the Basic Photography Course by Girish Menon

Internship at Bharatpur Bird Sanctuary under Mr. Girish Menon – Enjoyed an immersive experience exploring the wild through different camera lenses under the able tutelage of my mentor Mr. Girish Menon. Learned the virtue of patience and resilience along with refining photography skills amid the tranquil beauty of the bird sanctuary

2021-22

Unsplash – Achieved digital photography acclaim by captivating an audience with a gallery of over 50 mesmerizing photographs on Unsplash, a photo-sharing platform, amassing over 120K views and 2000 downloads

2023 onwards

SPANISH INTERESTS

Diploma Internacional de Español

2023

Distinction in C1 Level Examination (Written - 71%, Oral - 90%)

Gained practical insight into the power of learning a foreign language by engaging in Spanish conversations with the Head of Cell Culture Media products during the internship at BioConcept Ltd.

2023

COMMUNITY OUTREACH

Launched a mobile toy library through 'Each One Teach One,' to uplift underprivileged children fostering early education

2021

Crafted and edited a compelling documentary shedding light on the issue of Female Infanticide, advocating for change

2021

INTERESTS

Wildlife, Poetry, Food, Astronomy