

# PRERANA KULLA

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## EDUCATION

**North Carolina School of Science and Mathematics** – Morganton, NC

May 2025

- GPA 5.0

**University of North Carolina at Chapel Hill** – Chapel Hill, NC

Expected May 2029

*Community and Global Public Health; Neuroscience; Business Administration (Minor)*

## RESEARCH EXPERIENCE

**Utilizing Enzymatic and Chemical Delignification Methods on Fibrous Plants for Decentralized Production of Absorbent Materials for Menstrual Pads in Semi-Arid Regions** | Decortication, enzymatic delignification using laccase enzymes, autoclaving, FTIR spectroscopy, cryogenic grinding, microscopy using Leica ICC50 W, absorbency testing

- Collected and analyzed datasets on cellulose, hemicellulose, lignin, and moisture content to build a multivariate polynomial regression model that predicted the most suitable fibrous leaf substitute for cotton. Based on the results, utilized delignification and mechanical fluffing methods to create plants from pineapple and sisal fiber from leaves.

**Assessing the Impact of Water, Algae, Alcohol, and Oil-Based Inks on the Biodegradability of Cellulose in Filter Paper** | Fungi culturing, sterile technique, inoculation, serial dilution, incubation, agar plate preparation, and biomass measurement

- Conducted independent research on the impact of ink types on cellulose biodegradability using *Pseudopithomyces palmicola*, revealing that water- and algae-based inks significantly enhance degradation compared to oil- and alcohol-based inks.

**Design of Supramolecular Nanofibers for Gonorrhea Vaccines** | Duke Research in Engineering Program | Liberty Blue, HPLC, MALDI-TOF, TEM, Zeta Potential

Mentors: Dr. Joel H. Collier, Emily F. Roe

- Synthesized supramolecular nanofibers for sublingual gonorrhea vaccines, involving peptide synthesis purification, nanofiber characterization, and mucoadhesion analysis, contributing to the development of heat-stable, mucosal vaccine platforms.

## LEADERSHIP AND COMMUNITY INVOLVMENT

**Strive2Thrive Edu** – Charlotte, NC

*Tutor, Project Coordinator*

- Taught computing basics and biology to children in Uganda and Zambia. Communicated between tutor and students to ensure efficiency.

**MediLink** – Charlotte, NC

*Founder, Chief Executive Officer*

- Collaborated to form a non-profit to combine the disciplines of business/economics/finance with medical healthcare in order to train young entrepreneurs with important skills.

**Menstrual Movement in Morganton** – Morganton, NC

May 2024 – May 2025

*Founder*

- Organized drives that collected sufficient feminine products to support 4,000+ women in Harrisburg, Hyderabad, and Morganton.
- Publishing *Red Ribbon* targeted towards girls experiencing their first menstruation; had outreach to 200+ students through visiting schools and organizing webinars.

## WORK EXPERIENCE

**UNC ResNET IT Services** – Chapel Hill, NC

*Residential Computing Consultant*

- Provide in-room technical support for UNC residential students by troubleshooting network connectivity, device setup, and CCI laptop issues.

**Kumon** – Harrisburg, NC

*Tutor*

- Provided comprehensive tutoring in mathematics and reading to students across various age groups, cultivating their academic growth and fostering a positive learning environment.

### **RELEVANT COLLEGE-LEVEL**

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**Honors and Awards:** NC EMT Certification

**Clubs and Activities:** Accelerated Research Program, Research in Biology, Student Government Association Election Director

### **ADDITIONAL INFORMATION**

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**Honors and Awards:** NC EMT Certification

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