Akash Kakkilaya
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Summary

I am a biology major at The University of Texas at Austin, and I am planning on applying to medical school. Over the past few years I have enjoyed working with patients in a variety of settings from clinics, hospitals, and summer camps. I have also tried to further colorectal cancer research Texas A&M and MD Anderson. I want to become a physician, so I can combine these two passions.

Education

The University of Texas at Austin Bachelor of Science and Arts, Biology May 2020
Overall GPA: 3.91, Dean's List

Relevant Coursework: Biostatistics, Medical Terminology, Computational Biology, Genetics with Lab

Research Experience

The University of Texas at Austin- *Lead Research Assistant;* Austin, TX January 2017-Present

• Conducted stimulus-response experiments on *Arabidopsis thaliana* to determine the signaling pathway of extracellular nucleotides and their effect on primary root and root hair growth
• Photographed seedlings with microscope and measured growth with ImageJ software
• Analyzed results with a variety of statistical tools and presented findings with Excel and RStudio
• Trained and supervised students and junior mentors with their experiments, data analysis, and collection
• Developed protocols for various lab procedures and safety measures and implemented them by training others

MD Anderson Cancer Center- *NCI R25E Research Assistant;* Houston, TX June 2019-August 2019

• Exploited CRISPRa to modulate the expression of candidate genes that are differentially expressed between benign hyper-proliferations and premalignant polyps
• Transformed *E.coli* with plasmids that contained sgRNA targets sequences of the candidate genes
• Identified positive bacterial colonies with next generation sequencing (NGS)
• Maintained cultures of HEK 293T and HCT 116 cell lines
• Infected HCT 116 cells with a lentiviral vector that contained the CRISPRa constructs and performed RT-qPCR to verify gene expression in candidate genes

Texas A&M University- *Research Assistant for summer REU;* College Station Texas May 2017-July 2017

• Identified the molecular mechanisms underlying EGFR-independent colorectal cancer progression
• Assisted with mouse colonoscopies and dissections
• Counted and measured the length of polyps found in the colon and small intestine of mice under a dissection microscope
• Developed skills to handle and breed a mouse colony in compliance with IACUC regulations

Research Output

• Kakkilaya, A. (2020). *Discovering the role of eATP and various kinase receptors in the modulation of primary root length in Arabidopsis thaliana* (Unpublished undergraduate thesis). The University of Texas at Austin. Austin, TX.

• Bautista, L., Kakkilaya, A., Mir,I., *The history of opioid use* (abstract). Accepted to Pediatric Academic Societies 2020 Meeting canceled by COVID-19. Philadelphia, PA.

• Kakkilaya, A., Bommi, P., Vilar-Sanchez, E. (2019). *CRISPRa mediated expression of candidate genes in Hyperplastic Colorectal Polyps*(abstract). Poster at MD Anderson Summer Experience Poster Presentation, Houston, TX

• Kakkilaya, A., Mantilla-Rojas,C., Bourgeois,E., Jaimes, J., Threadgill, D.(2017). *The effect of Erbb family on colorectal cancer* (abstract). Poster at *TAMHSC 2017* Summer Research Program. College Station, TX.

Leadership and Activities

Children's Blood and Cancer Center- *Volunteer* September 2019-Current
• Engaged with pediatric oncology patients and their families by playing games, constructing crafts, and conversing
• Completed inventory checks of food, beverages, and medical supplies and restocked items as needed
• Transported blood products to and from the blood bank in compliance with specimen transport protocol
• Coordinated with other volunteers to ensure all toys, furniture, and bedding were cleaned and sanitized

Camp Kesem- *Engagement Committee Member* September 2018- Current
• Fundraised over $1,500 personally and over $180,000 as an organization to send kids affected by their parent's cancer to summer camp.
• Implemented initiatives to recruit a more diverse group of counselors to the organization.
• Developed programming to make all members feel connected to each other and to the mission of Kesem
• Facilitated support groups between campers so they could help each other throughout the year once Camp ended
• Encouraged children to discuss the issues they faced while their parent had cancer
• Engaged with camp participants through coordinated activities to help distract from challenges they faced at home

Dell Children's Emergency Department- *Volunteer* September 2017- December 2019
• Distributed comfort care items such as toys drinks, and snacks to patients and their families
• Assisted triage nurses with registration and organized patient documents in compliance with HIPAA regulations
• Ensured there was adequate patient protective equipment, clean rooms, linens, nutritional items, and wheelchairs, so hospital staff could focus on direct patient care

Peer-Led Undergraduate Studying (PLUS)- *Facilitator* September 2018- December 2018
• Led weekly study sessions to clarify concepts for classmates in my introductory biochemistry course
• Collaborated with professor and other facilitators every week to plan and implement learning sessions
• Promoted collaboration among students through weekly quizzes and application problems

Camp Quality- *Counselor* July 2018
• Served with other counselors to create an environment where kids who have or have had cancer can find respite and regain their childhood
• Supported kids as they discussed the challenges they faced during treatment and in remission
• Participated in camp activities such as swimming, rock climbing, arts and crafts, and silent disco with the campers

Skills

• R Programming Language/RStudio
• Recruitment of participants for organizations
• Regulatory compliance with BSL2 and IACUC
• Protocol development, implementation, and training
• Lab Techniques: Bacterial cultures, Plasmid isolation, Tissue culture, PCR, CRISPR, PCR, DNA/RNA Extraction, Mouse Handling
• Certifications and Licenses: AED/CPR, CITI, ICH, GCP
• Basic Spanish