

# WISEST Summer Research Program

## Journal of Student Research 2020



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# Introduction

Each summer, WISEST places 45-50 grade 11 students in a 6-week paid internship called the Summer Research Program (SRP). Students gain experience in projects where their genders are considered underrepresented. Female and gender minority students are placed in Science, Technology, Engineering or Math (STEM) projects, and we place a few male students who demonstrate a genuine interest in nursing, nutrition, and/or human ecology. Due to the unprecedented global Covid-19 pandemic, this year's WISEST Summer Research Program was transitioned into a virtual program. WISEST was able to place 21 students in research placements for a 4-week program with students working remotely to complete their projects and participate in professional development, mentoring, research tours, and social activities.

## Goals of the SRP for our students

- Broaden awareness about less-traditional fields of study and diverse career options.
- Engage with other participants who share similar interests.
- Learn about the techniques and types of research conducted in different STEM fields.
- Connect with and learn from successful professionals in the STEM fields.
- Develop key professional skills.
- Contribute to trailblazing research (in the lab or the field).
- Become familiar with academic and university life at the University of Alberta.

## We are a donor- and volunteer-driven Community of Catalysts!

Although based on the University of Alberta campus, WISEST relies almost completely on donations from corporations, foundations, individuals and the public sector to develop and deliver our innovative programs. Contrary to perception, WISEST does not receive any core funding from the University of Alberta, but we are grateful for in-kind contributions such as space and access to campus resources.

## Our Volunteers

Our program would not be possible without the Principal Investigators who invite these students into their research and the Supervisors and Research Team Members who provide mentorship and support for the students throughout the program and the volunteers who support our Professional Development Sessions. In 2020, 160 people gave 2,370 hours of their time to support this program.

# Thank you to our 2020 Funders:



**MOTOROLA**



# The Spirit of Dr. Armour Award



WISEST lost an important member of our community in May 2019 when Dr. Margaret-Ann Armour passed away. Margaret-Ann Armour dedicated her life and career to diversity and the advancement of women in the sciences. But more fundamentally, she dedicated her spirit and her passion to people. Over the years, she became a recognized leader in raising national awareness among school-aged girls, educators, parents, and employers of the importance of encouraging women to take up careers in science and engineering. Simultaneously, she became a beloved member of numerous groups and networks through her genuine enthusiasm for individuals and sincere belief in the power of community. She loved people and people loved her back. In her own words “Learning what different groups do, think and believe, can lead to empowerment”.

Margaret-Ann is deeply missed by countless people whose lives were touched by her tireless determination to make an impact and bring change to the world. She leaves us all with a call to action:

***“I give you my greatest wish - to go meet your dreams”***

It is in this vein that WISEST is pleased to continue the **“Spirit of Dr. Armour Award”**, for the second year this award is dedicated in her memory and in her honour, to individuals whose spirit and enthusiasm for diversity in STEM is genuine, infectious and intentional.

## The Advocate Award

This award is presented to a principal investigator or supervisor, who through their participation in the Summer Research Program has shown advocacy in creating a more diverse STEM community including:

- Enthusiastically mentoring SRP students
- Promoting the SRP & WISEST
- Participation in the SRP program with high student satisfaction results

## SRP Student Award

This award is presented to a grade 11 student, who, through their participation in the Summer Research Program has shown:

- a genuine interest and passion in pursuing a STEM education
- leadership and engaged participation in all the SRP program offers
- collaborative interactions with other SRP participants, Principal Investigators, graduate students, WISEST staff, and the lab staff
- an innovative and creative problem-solving approach
- demonstrated resilience in overcoming barriers and obstacles

*In this presentation,  
WISEST would like to recognize:  
**Dr. Ahlam Abdulnabi &  
Ehlam Iftikhar**  
with the Dr. Armour Spirit Awards.*



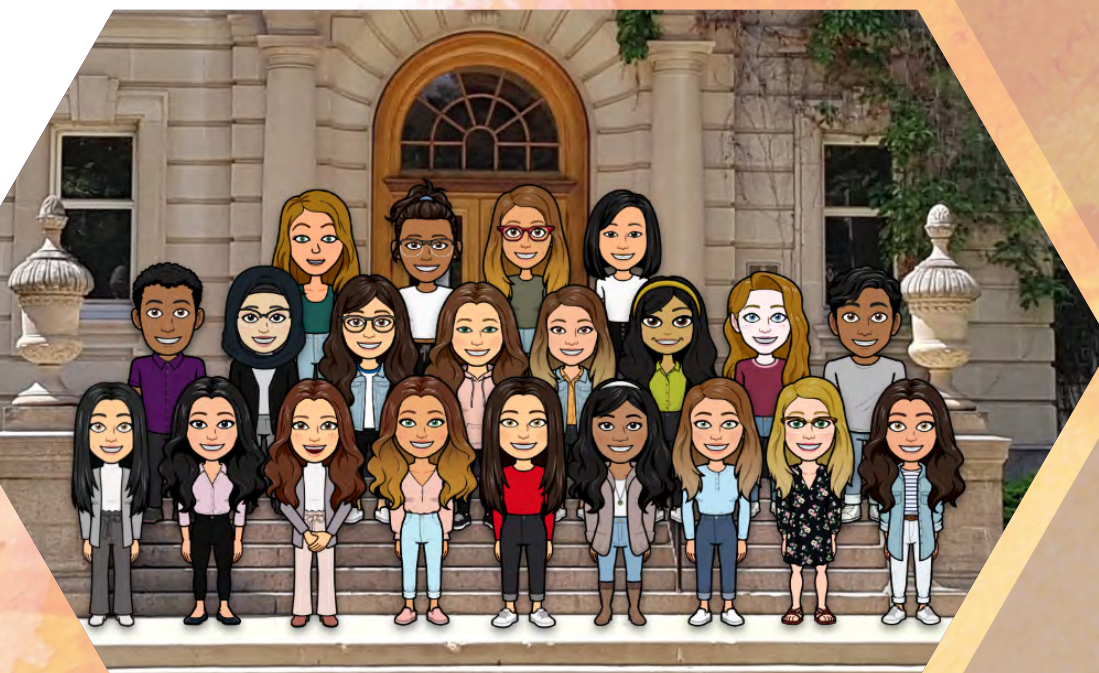
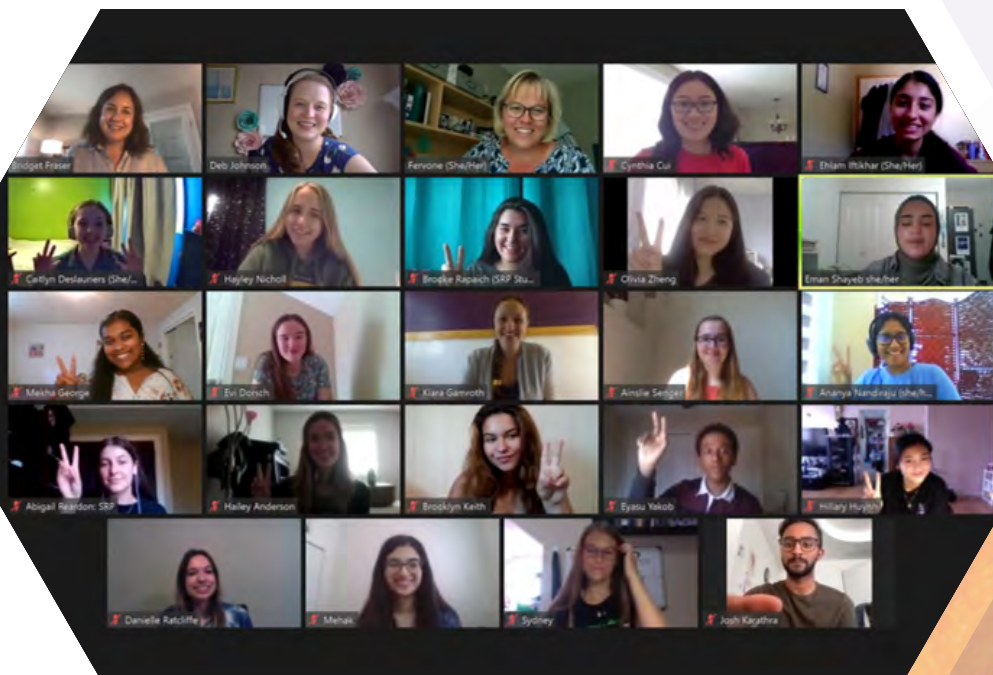
**Ehlam Iftikhar**



**Dr. Ahlam Abdulnabi**

# A Snapshot of the Summer

The virtual nature of this year's program meant that, while students were unable to conduct research in a laboratory setting or visit campus, they had a lot of fun interacting over video calls and conferencing this summer! This page provides a snapshot of some of the fun and laughter had during professional development sessions, and social activities, such as the student-organized "Show & Tell."



# Celebration of Research

Our annual Celebration of Research was hosted in a virtual setting this year. This has enabled WISEST to record and capture a glimpse of the hardwork and opportunities the students were involved in this summer! Welcomed by WISEST Co-Chair, Dr. Tian Tang, and greeted by Honourable Heather McPherson, the students present their research and experience in the Summer Research Program. This is followed by recognitions by the WISEST Team Lead, Fervone Goings, and presentations of The Spirit of Dr. Armour Award's.

If you would like to watch the WISEST Summer Research Program's Celebration of Research, please visit [youtu.be/72U\\_iLxpXJU](https://youtu.be/72U_iLxpXJU) or click below.



## Welcome to our Virtual Celebration of Research

Please mute and turn video off



This virtual Celebration of Research will be RECORDED. This is to enable us to share this event publicly. We will ensure that the systems and processes put in place for video and audio recordings of its activities are compliant with the FOIP Act.





# Our SRP Students Researchers

Take a moment to meet some of our SRP Students as their enthusiasm and honesty will inspire you. These capable young people are building a strong foundation for their future success, contributing to a stronger STEM community, and preparing to change the world.



# Hailey Anderson



## High School

École Secondaire Notre Dame High School

## Lab Placement

Renewable Resources, Faculty of Agriculture, Life, and Environmental Sciences

## Project Title

Increasing the amounts of organic matter in agricultural soils as a means of climate change mitigation

## Final Project

[doi.org/10.7939/r3-xss1-ga26](https://doi.org/10.7939/r3-xss1-ga26)

## Supporter

Faculty of Agriculture, Life and Environmental Sciences, and WISEST

My name is Hailey Anderson, and I attend École Secondaire Notre Dame in Red Deer, Alberta. Ever since I was little, I knew that science was the path for me. In Middle School it was through Bill Nye experiments, then in High School, it was biology class with my fun-loving, passionate teacher, but I always had a desire to learn the details of the world around me. Whether it is studying the complexities of the human body or finding solutions to global warming, I am ready to learn as much as possible.

This is why my placement with the Faculty of ALES was such a dream for me! For my project this summer, I looked at ways in which agricultural soils can be used as a possible climate change solution through the implementation of various treatment types such as no-till, agroforestry, and crop cover. Through a literature review, I was able to see that all of the aforementioned methods did contribute to the total amount of carbon stored in the fields. Even though I was not able to be in the lab sifting soil samples, I was able to learn a vast amount of information on new techniques showing promise in the field. A research aspect I explored this summer was writing my own review paper based on the findings of the various studies I had looked at throughout the month. I can genuinely say that there is no better feeling than putting so much effort into a piece of work, and then being complimented on the result.

This summer did of course come with its challenges. Going into this program, you believe that all the other students are geniuses' or the next protege, and you will question your worthiness of this placement. It is through accepting

that all of you are in the same boat, and allowing yourself to slip up every now and then that you can begin to truly take advantage of this amazing opportunity. I would recommend this Program because of the countless mentor opportunities, the student bonding, and the professional development sessions which enabled us to grow into well-rounded individuals who are inspired to make a positive change in the world. This month has shown me my full potential, and I have left more sure of my place in the world of science. WISEST will forever be a driver for the empowerment of diversity in STEM, and I am so proud to be a part of this supportive community. So, for any girls out there who have a love for biology, chemistry, math, physics, engineering, or computer science, please apply for this program. I guarantee it will change your life.

Finally, I would like to thank Mr. Cole Gross for all of his support throughout the program, as well as Dr. Edward Bork and Dr. Scott Chang. I would also like to thank my sponsors, WISEST and the Faculty of ALES for making my participation in the SRP possible, as well as all of the people who helped get me through this month, namely the WSRP Coordinators, Deb and Bridget, and my fellow student researchers.

# Mehak Arif

## High School

J Percy Page High School

## Lab Placement

Biological Sciences, Faculty of Science

## Project Title

Testing the accuracy of BirdNET, Automatic Birdsong classifier

## Final Project

[doi.org/10.7939/r3-6khh-kz18](https://doi.org/10.7939/r3-6khh-kz18)

## Supporter

Rotary Club of Edmonton Glenora, and Motorola



My name is Mehak Arif, and I am from Edmonton, Alberta. Before high school, I never had a favourite subject, but that changed when I took biology and loved it! I hope to go to the University of Alberta in the future and Major in Biology!

I was motivated to apply to the WISEST Summer Research Program for more than just the opportunity to have a summer job, but to meet STEM mentors, learn a variety of skills, interact with like-minded individuals, and have real-life experience working in STEM research. The list of opportunities offered through WISEST is not limited. I also loved the values that WISEST stood for and its mission to increase diversity in STEM fields. After going through the WISEST Summer Research Program's website, I immediately knew this was something I wanted to be a part of.

My experience in the WISEST SRP was absolutely amazing! My project this summer was to test the accuracy of BirdNET, an automatic birdsong classifier. This was done by taking a set of recordings made in nature and identifying them by uploading them to BirdNET and classifying them manually. In addition to working on my project, I met many mentors, asked them questions, listened to their great advice, and learned from their stories and experiences! I attended numerous professional development sessions on topics such as how to survive in a digital world and the art of networking. I also attended lab tours and saw first-hand the NAIT CGI Lab and the University of Alberta's Paleontology Lab. In addition to all of these opportunities, I have made long-lasting connections and friendships with my fellow student researchers and some of the mentors!

Going into the program, I was hoping to answer one question, "What do I want to be when I grow up?" The WISEST Summer Research Program introduced to me many different career options! More importantly, it taught me that it is okay to not be sure what I want to do. I have the rest of my life to explore different career pathways and figure out which one is right for me. As long as I keep an open mind and take risks, eventually, I will be able to answer this question.

Thank you to the WISEST Team: Deb, Bridget, Fervone, and Helen for their support during the program. A huge thank you to Dr. Richard Hedley, my Direct Supervisor, and Dr. Erin Bayne, my Principal Investigator, for having me on their team and for their guidance and mentorship. I would also like to thank the Rotary Club of Glenora and Motorola for their generous support of this program!

# Cynthia Cui



**High School**  
Fredericton High School

**Lab Placement**  
Mechanical Engineering, Faculty of Engineering

**Project Title**  
The Use of Carbon Fiber/Epoxy Braided Composites in the Design of a Rowing Shell

**Final Project**  
[doi.org/10.7939/r3-73pf-zn73](https://doi.org/10.7939/r3-73pf-zn73)

**Supporter**  
Isomass Scientific Inc.

My name is Cynthia Cui and I am going into Grade 12 at Fredericton High School in Fredericton, New Brunswick. I love school and learning about everything I can. Some of my favourite subjects in school are math and chemistry. Outside of school, I play chess competitively and am currently working on a flood prediction app. I hope to pursue a degree in either biomedical or mechanical engineering. This summer, I was placed in the Department of Mechanical Engineering where I examined the use of braided composite materials in the design of a rowing shell. I compared the properties of different materials and braid angles and designed a model of a rowing shell using SOLIDWORKS®, a computer-aided design software.

Science and STEM careers have always been an interest of my curiosity, including the facets of research. When I first heard about the WISEST Summer Research Program, I knew it was something I had to apply to. This opportunity surrounded me with 20 like-minded individuals with whom I have made lifelong friendships. I was able to participate in cutting edge research at the age of 17 and was given a head start on my career path. The Summer Research Program is truly a once in a lifetime experience and it is safe to say the program exceeded all my expectations. It was not only an educational and impactful experience, but was also a lot of fun!

Aside from the research, the program was filled with learning opportunities. We were able to improve upon skills that are not traditionally taught such as communication and public speaking skills. These are

important skills that I know will help me thrive in university and in the workforce. We also experienced laboratory tours and met with mentors who broadened our knowledge on different careers in STEM. Most importantly, over the course of the program, I have gained the confidence to overcome any barriers I encounter, follow my passions, and continue to dream big.

I would like to thank the Carey lab members: Dr. Jason Carey, Eric, Raelynn, and Samir for their guidance and support. I would also like to thank WISEST for making this amazing experience possible, and I extend a thank you to Isomass for supporting this program.

# Caitlyn Deslauriers

## High School

Archbishop MacDonald High School

## Lab Placement

Computer Science, Faculty of Science

## Project Title

Sharing a Cree Corpus Through the Web

## Final Project

[doi.org/10.7939/r3-052x-sa69](https://doi.org/10.7939/r3-052x-sa69)

## Supporter

Threshold Impact, and Motorola



My name is Caitlyn Deslauriers and I attend Archbishop MacDonald High School in Edmonton, Alberta. I am particularly interested in math, engineering, chemistry, and robotics. My life goal is to be Tony Stark. This summer, I helped the EdTeKLA group with their CreeTutor app. I created a corpus website where people can go to download the language resources used to develop the app. Because there is a shortage of Cree language resources, this can help to make the language more accessible.

My greatest challenge this summer was my lack of experience in coding. My project required the use of coding languages like Python, HTML, and CSS, so I had to learn very quickly. However, my supervisor and the rest of my team were always there to support and guide me through any problems I encountered.

The three most important things I learned this summer are to always ask questions, having a support network is essential, and to never be afraid to try new things. At the beginning of the program, I was shy and did not speak up a lot. I could have progressed a lot more quickly if I had asked for clarification or help sooner. I learned a lot more about coding when I started to ask my supervisor how to do things instead of just blindly Googling for hours. I also learned more from mentor sessions when I started to ask questions. There is no such thing as a dumb question and people are always happy to share their experiences and subjects that they are passionate about! Through the SRP, I was able to form a support network of like-minded

people. My peers were all so passionate about STEM and it was a privilege to work with them. Whenever anyone had a question or technical issue, people were there to help them out or fill them in on what they missed. I loved meeting all of my fellow researchers and I hope to stay in contact with them. Because I wasn't afraid to try something new, I gained a lot of experience in coding and realized that it is something I enjoy! I never would have considered a career in computer science had it not been for the SRP.

I would like to thank Dr. Carrie Demmans Epp, Mr. Owen McLeod, and the rest of the EdTeKLA team for their support throughout my project, as well as for welcoming me into their team. I would also like to thank the WISEST team, especially Deb and Bridget, for their constant support and for organizing the program, as well as my supporters Motorola and Threshold Impact. A special thanks to all of the mentors who took the time to speak with us and share their experiences; you all taught me lessons that I will use throughout my life.

# Evi Dorsch

## High School

Strathcona High School

## Lab Placement

Mechanical Engineering, Faculty of Engineering

## Project Title

The Capability of Lyocell/EcoPoxy Braided Composite in the Creation of a Prosthetic Socket

## Final Project

[doi.org/10.7939/r3-ezwg-zt49](https://doi.org/10.7939/r3-ezwg-zt49)

## Supporter

Faculty of Engineering, and the Rotary Club of Edmonton Glenora



My name is Evi Dorsch and I had the pleasure of being a part of this year's WISEST Summer Research Program. I attend Strathcona High School in Edmonton, Alberta and have always had a passion for learning, in particular when considering the STEM fields, however, school has never been able to fulfill my appetite to learn. The WISEST SRP allows for a new perspective on what it means to learn and to conduct research. It has inspired me to continue in a field in which I can implement research to some degree, however specifically what field that is I do not know. This program has shown me the value of inquiry and how it has the power to change the way we see the world. It has been exhilarating being at the forefront of research delving into questions that have not yet been studied.

The SRP has been an experience that can not easily be encapsulated in words. The program has enabled me to find the courage to achieve my goals despite the stigma that society puts on a woman's ability to succeed in STEM. This is matched with a positive environment in which I was able to research without the fear of being ridiculed for my ideas or contributions. This program has been truly unique. It allows high schoolers with a passion of STEM to explore in a way classroom settings do not allow for, while also providing professional development sessions with lessons that we will all be able to implement in our future endeavours. Furthermore, the mentors I have gained have been a great hope and inspiration to me.

This summer I was placed in the Faculty of Engineering in the Department of Mechanical Engineering. Here I was given the opportunity to study green braided composite materials, in particular, their use in prosthetic sockets. For my project, I studied how the plant-based composite lyocell-Ecopoxy can be implemented as a more sustainable material in prosthetic socket design. This material provides both economic and environmental benefits when compared to materials typically used, such as carbon-epoxy and glass-epoxy.

This summer has been one I will not easily forget thanks to the many amazing mentors and friends I have made. I would like to thank the Multipurpose Composite Group under Dr. Jason Carey for allowing my project to become a reality, as well as, my supervisors Eric, Samir, and Raelynn. I would also like to thank my fellow Student Researcher, Cynthia, for supporting me over the month. As well, I would like to thank the Rotary Club of Edmonton Glenora and the Faculty of Engineering at the University of Alberta for supporting this Program. Lastly, I would like to thank Bridget, Deb, Fervone, and Helen from WISEST for allowing me to be a part of this program and providing me with memories I will cherish for a lifetime.

# Kiara Gamroth



**High School**  
Gus Wetter School

**Lab Placement**  
Linguistics, Faculty of Arts

**Project Title**  
Changes of Production and Perception of the Aging Voice

**Final Project**  
[doi.org/10.7939/r3-wy05-az94](https://doi.org/10.7939/r3-wy05-az94)

**Supporter**  
Faculty of Arts, and WISEST

Hello, my name is Kiara Gamroth and I was a Summer Researcher with WISEST this year. I am from Halkirk Alberta and attend Gus Wetter School. Through the WISEST program I was placed in the Department of Linguistics where I studied changes in perception and production of the human voice as it ages.

I applied to be a part of the WISEST program to explore my interest in STEM. Through this program, I had the chance to gain first-hand knowledge and experience in a field that interests me. Additionally, I had the opportunity to work with female scientists and gain their perspectives both through their work and also by seeing how they navigate a field where women are underrepresented. I applied to this program in hopes of gaining a better understanding of the day-to-day working of a lab and get the opportunity to thrive in a scientific community with like-minded people.

I think the WISEST program is vitally important for people in underrepresented fields. It helped solidify my ambition to pursue a career in the sciences as a female through exposure to women already in the STEM fields. Furthermore, I had the opportunity to interact with successful women who have not let anything come in the way of their accomplishments. Not only did the program drive me towards a STEM career but it also connected me with like-minded people and helped create a positive community of young aspiring scientists to share ideas and connect with.

The three most important things I learned this summer was firstly, to put yourself out there. Being a quieter person, I have always struggled with being able to ask questions and make comments in bigger groups. The project has been a safe space for me to ask questions and be myself with confidence. Secondly, I have learned the value of having other female friends in STEM and being able to have friends who are interested in the same things as each other creates instantaneous connections. Lastly, I have gained a variety of important networking skills that will further my professional career and have already connected me to working professionals in fields that interest me.

I would like to thank my Supervisor, Ms. Stephaine Hedges, and my Principal Investigator, Dr. Benjamin Tucker, for helping me with my projects and welcoming me into their lab. I would also like to thank WISEST, especially Deb and Bridget for all their help and support.

# Mekha George



## High School

Holy Redeemer Junior Senior High School

## Lab Placement

Computer Science, Faculty of Science

## Project Title

Creating Demos For Games to Reinforce Cree-language Learning

## Final Project

[doi.org/10.7939/r3-qckr-3r96](https://doi.org/10.7939/r3-qckr-3r96)

## Supporter

Edmonton Chapter of Beta Sigma Phi, and Motorola

Hello! I am Mekha George, and I attend Holy Redeemer Junior-Senior High School in Edson, Alberta. I have always enjoyed my science classes, with chemistry being my favourite. However, I would like to pursue the field of engineering when I am older. The specific branch of engineering I will pursue is something I am still thinking about, but I am leaning towards computer engineering.

For the WISEST Summer Research Program, I was placed under the Department of Computer Science in the lab of Dr. Carrie Demmans Epp. The specific project that I was part of was the CreeTutor project. Creetutor is a website that aims at teaching people Cree through a series of games. However, the visual instructions that were required for the games did not exist. As such, my project this summer was to create demo videos for these games. While working on this project took up most of my time, this program had so much more to offer! Every day we were provided with different opportunities to meet new people and to make connections with mentors and our peers. Professional development sessions on networking and online communication were also held to ensure our success in the program. This program taught me so much about careers in STEM, and how they have a major impact. Everyone was very supportive, and it strengthened my resolve to pursue a STEM field.

The relevance and importance of WISEST cannot be overlooked. Although we have come a long way in regards to inclusion and diversity, racism and sexism still exist within our society. Programs that promote inclusion, like

WISEST, are vital in overcoming these inequalities, and that is why it is so important. Diversity brings about a better workplace, and having inclusive policies is often a change for the better. WISEST fosters such an environment and approach, which is why this program is vital in today's world.

I recommend this program to everyone who enjoys STEM. The SRP will provide you with so many valuable opportunities! The past month was so much fun, and I learned so much from all of the sessions. Without the WISEST Summer Research Program, I would have never had the opportunity to meet so many intelligent people, and for that, I am forever grateful.

I would like to acknowledge the people behind WISEST, because without them, this program would not be the same. I would like to thank the Program Coordinators, Deb and Bridget, the WISEST Team, the numerous sponsors, and everyone else who made this program possible. I would also like to thank the EdTeKLA lab group for being amazing to work with. Lastly, I want to give a shoutout to my fellow SRP student, you guys made this program awesome, and it would not have been the same without all of these smart, capable, talented people.

# Hillary Huynh



## High School

École Secondaire Notre Dame High School

## Lab Placement

Mechanical Engineering, Faculty of Engineering

## Project Title

The Application of SSM and Other Methods in Studying the Morphology of Anatomical Shapes

## Final Project

[doi.org/10.7939/r3-t66b-zv93](https://doi.org/10.7939/r3-t66b-zv93)

## Supporter

Threshold Impact

My name is Hillary Huynh, I am from Yellowknife, NT and I was placed in the Department of Mechanical Engineering for my SRP project. I am an ambitious student, athlete, and researcher who is passionate about STEM. My project for the SRP 2020 consisted of analyzing the applications of SSM and other methods in studying the morphology of various anatomical shapes; the numerous structures included the human talus, pelvis, femur, and many others.

As an avid researcher, I have always been curious and eager to learn. My interest in STEM began at the age of 12; I conducted annual science experiments, not knowing where they can lead me. I went from winning my territorial science fairs to medalling at the national level! With an opportunist mindset and a strong desire to change the world, I believed that WISEST was the perfect place for me. Within the short time span of a month: I learnt an astronomical amount of skills from mentors, which ranged from crucial software skills to networking advice. I was able to grow as an individual and as a researcher; the lessons that I have learnt and the experience that I have gained will forever resonate with me.

When thinking about a “research program”, most individuals will probably believe that it will be a strenuous and stressful experience. Yet, WISEST is the complete opposite! Since it is such a well-rounded program, we had the opportunity to chat with experienced individuals, learn more about underrepresented fields, interact with like-minded peers, and the chance to work on unique projects. Even though the program was virtual this year,

the cohort was still able to create meaningful relationships with one another and with the mentors. I recommend the SRP because of how life-changing it was; the program gave me the chance to discover who I am, permitted me to grow and unlock my true potential.

While spending countless hours learning new software techniques and doing research, my lab still found time to laugh and relax. My supervisor, Maha Ead and principal investigators, Dr. Duke and Dr. Westover would talk about their day-to-day lives, we would have inside jokes, create a bright pink 3D model of a hairbrush, but also get to learn more about one another and develop meaningful relationships. I would like to extend a huge thank you to Maha Ead, Dr. Duke and Dr. Westover for their endless support. I am beyond grateful for the opportunity that WISEST has given me and I am thankful to be sponsored by Threshold Impact; this experience was made possible because of their help and I wouldn't have been able to create this project without them.



# Ehlam Iftikhar



## High School

St. Paul Regional High School

## Lab Placement

Civil and Environmental Engineering, Faculty of Engineering

## Project Title

Dewatering and Consolidation Behavior of Oil Sands Tailings

## Final Project

[doi.org/10.7939/r3-9n1g-ew76](https://doi.org/10.7939/r3-9n1g-ew76)

## Supporter

Dr. Beier Lab, and WISEST

My name Ehlam Iftikhar and I reside in St. Paul, Alberta. Despite being a small town, there are still numerous opportunities to be actively involved in my community, such as Toastmasters, youth council, and hospital volunteering. Through this journey of discovering my interests, my passion for STEM has increased and was greatly reinforced during high school, where I had the privilege of being a student to devoted biology and chemistry teachers. This passion for STEM has led me to aspire to become a cardiovascular surgeon so I can continue my ambition in helping society.

During the summer, I conducted research associated with the dewatering and consolidation behaviour of oil sands tailings. This is a liquid waste produced by extracting precious minerals. The objective is to convert this byproduct into a resistant material by utilizing dewatering technologies, which eventually allows industries to reclaim the land previously used in the mining process. My favourite part of this research was definitely analyzing the literature. Not only has it expanded my knowledge on the detrimental issue of mine waste, but it has also improved my efficiency in recording information as well.

My experience in the WISEST Summer Research Program was spectacular! From learning valuable information in organized sessions, to receiving guidance from mentors, to building indefinite friendships, this summer will be

an unforgettable memory. The SRP has matured me into a confident individual who can conquer any obstacles encountered in academia. This is strengthened by all of the mentor opportunities and a broadening of awareness in non-traditional careers where gender disparity exists.

This program provides a variety of important skills, including networking, which is an essential tool to building constructive relationships and exchange information and ideas. Throughout the program I have expanded my professional network with professors who conduct research in fields of study I am interested in, which provides an optimal chance for me to learn fascinating information and cultivate connections that I can draw on in the future.

I would love to extend my sincerest gratitude to WISEST and the infinite amount of support and encouragement which allowed me to be successful in this program. My sponsors also deserve a thank-you as their generous contribution ensures the continuity of this remarkable internship. This research's accomplishment could not have been without the exceptional direction provided by Dr. Nicholas Beier (Principal Investigator) and Dr. Ahlam Abdulnabi (Direct Supervisor), who were my phenomenal research team. An additional acknowledgment goes towards everyone who helped create this memorable experience!

# Josh Karathra



## High School

Old Scona Academic

## Lab Placement

School of Public Health

## Project Title

Popularity of Nutrition Influencers and Products and Services Promoted on Their Websites

## Final Project

[doi.org/10.7939/r3-1k6f-9t12](https://doi.org/10.7939/r3-1k6f-9t12)

## Supporter

School of Public Health, and WISEST

My Name is Josh Karathra and I am from Edmonton, Alberta. This year during the WISEST Summer Research Program (SRP) I was placed in the University of Alberta's School of Public Health to conduct research on digital food environments. Our lab analyzed and characterized the popularity of nutrition influencers and products and services promoted on their websites. This project aimed to better understand the nature of the growing impacts of social media on public health. Over the course of this project I found that my interest in public health was renewed as we explored different elements of public health both on a micro and macro level. I would like to thank my supervisor and principal investigator, Dr. Melissa Fernandez and Dr. Kim Raine, as well as WISEST and the University of Alberta School of Public Health for providing this incredible opportunity for high school students to experience research in academia.

One of the first things I learned early on about the nature of public health research is how vast and frequently evolving the field is. With the dawn of the internet and the widespread use of social media, nutrition in a digital environment has become a crucial area of research. A primary focus of digital food environment research is understanding the effects that online marketing and platforms have on average consumers. The findings of our research contribute to the prerequisite steps for achieving this primary focus. By characterizing the products and services found on nutrition influencers websites, we not only gain a deeper understanding of the nature of these online spaces, but we allow for further research to

be conducted on things like the effectiveness of these products and services and marketing techniques to promote credible sources. The research that we conducted is a small, but important puzzle piece that contributes to the mosaic that is public health research.

The most important lesson I learned from this summer was how much you are capable of learning about a specific topic if you are willing to apply yourself consistently. Self-study and curiosity are driving factors in any research and this process has opened my eyes to how much new knowledge can be obtained by using the libraries and resources around you. Whether it be nursing, public health, or engineering, if you take the initiative to reach out to experts in their field and seek out credible resources, there is so much to be learned and discovered. The WISEST SRP provides you with a network of professionals that are willing to fuel your curiosity and guide you through unknown concepts and experiences.

# Brooklyn Keith



## High School

Bellerose Composite High School

## Lab Placement

Psychology, Faculty of Science

## Project Title

Comparative Study Between Zebra Finches (*Taeniopygia castanotis*) and Humans (*Homo-sapiens*): Communication Development

## Final Project

[doi.org/10.7939/r3-9xfh-e319](https://doi.org/10.7939/r3-9xfh-e319)

## Supporter

Faculty of Science, and WISEST

My name is Brooklyn Keith and I attend Bellerose Composite High School in St. Albert, Alberta. I am very enthusiastic when it comes to all things STEM but chemistry has always been my favourite. I am interested in pursuing a career in biochemistry or potentially biomedical engineering, thanks to the WISEST Program.

During this year's SRP I was working with Dr. Chris Sturdy, Ms. Kina Montenegro, and Mr. Prateek Sahu in the Songbird Neuroethology Laboratory at the University of Alberta. I studied the zebra finch, a type of songbird, and looked into the comparative studies between zebra finches and humans when it comes to their communication development. Thanks to WISEST and the Faculty of Science I was able to experience what it was like to be a scientific researcher for the month of July.

There were many challenges that were associated with the SRP, especially this year. My organization, focus, determination, and dedication were tested this past month by this online STEM world. Not only that, building the confidence to go from High School to University level reading, writing, and even communicating was a big learning curve. As rewarding as those experiences were the thing that makes me the proudest is knowing that I am part of a very amazing group of women that are working to turn their passion for STEM into a career. Thanks to WISEST and the many amazing mentors I had the pleasure to meet, I am more empowered than ever to become a successful woman in a STEM career of my choosing.

I cannot find words to explain how amazing this program truly is. It allowed me to gain confidence in myself while still developing skills that will aid me in pursuing a future in STEM. I have grown as a student as well as a person and can take the skills I have learned and apply them throughout my future. Not only did I gain knowledge, but the people I met became an instant support group that guided me and motivated me through these stressful, but amazing weeks. I was able to see what life was like as a scientific researcher while making connections to people my age with similar interests. This program has allowed me to have one of the most memorable summers yet.

# Ananya Nandiraju



## High School

Lillian Osborne High School

## Lab Placement

Civil and Environmental Engineering, Faculty of Engineering

## Project Title

Geotechnical Site Investigations

## Final Project

[doi.org/10.7939/r3-s4yw-dk29](https://doi.org/10.7939/r3-s4yw-dk29)

## Supporter

Dr. Hendry Lab, and the Edmonton Chapter of Beta Sigma Phi

My name is Ananya Nandiraju; my name means unique, and I try to live up to that. I attend Lillian Osborne High School in Edmonton, Alberta and my passion lies within physics and mathematics. Mathematics has always drawn me in because it's like a puzzle, it doesn't matter the path you take to finish it, the end product is the same. This summer I was placed in the Department of Civil & Environmental Engineering and my project focused on the importance of conducting geo-technical site investigations. These are critical to construction as they determine the suitability of a site.

This program teaches you to take risks, many students choose not to apply because they believe they don't have a chance of making it in. As students we don't like facing failure but without taking the risk to even apply who knows what could have happened. The WISEST SRP helps students get first-hand experience regarding the STEM fields they are interested in pursuing and through this process you make an SRP family. You develop a wide range of skills which cannot be learnt until you are either in university or in a career. This program puts you ahead of the game.

The one skill I have learned through my experience in the SRP is the art of networking. We were given opportunities to connect and mingle with industry professionals, university and graduate students. This helped build our confidence and ability to speak in a professional manner. Speaking with these people has not only broadened my perspective but has taught me to be open to new things.

Mentorship sessions fostered a space for students to build new friendships, professional and informal. I know this will be a handy tool for me starting from my educational career itself.

I am most proud of having a published paper. By the age of 16, most students do not have the opportunity to conduct university-level research moreover have it published. I had an amazing research team who helped me every step of the way who saw me as more than just a high school student, but as a peer passionate about their work. My path to the SRP is something I am proud of, it took a lot of dedication and hard work to succeed in this program. This program gave me the tools to develop my interpersonal skills and mainly the opportunity to learn about a field of STEM I am interested in.

I would like to thank Dr. Michael Hendry and Ms. Akhila Palat for giving me the opportunity to conduct my research and for welcoming me into their team. I would also like to thank all supporters of WISEST, and especially The Edmonton Chapter of Beta Sigma Phi and the Dr. Hendry Lab. Finally, I would like to thank my family, friends and teachers who motivated me to participate and apply to this program. Thank you!

# Hayley Nicholl



## High School

Roland Michener Secondary School

## Lab Placement

Biological Sciences, Faculty of Science

## Project Title

Geographic Ranges of Dinosaurs Living in Western North America During The Late Cretaceous Period

## Final Project

[doi.org/10.7939/r3-pp56-av31](https://doi.org/10.7939/r3-pp56-av31)

## Supporter

Faculty of Science, and International Paper

My name is Hayley Nicholl, I am a grade 11 student at Roland Michener Secondary School in Slave Lake, Alberta. I have always had a love for science, specifically biology and chemistry. Although I do not know what I want to do as a career, I do know I want to attend the University of Alberta for sciences. This year in the Summer Research Program I was placed in the Department of Science in the Laboratory of Vertebrate Paleontology. I read articles regarding several species of dinosaurs found throughout Western North America. I scanned these articles to find where specimens were found and looked at the dispersion of the species.

I was very motivated by my biology teacher to apply for this program. At the beginning of my grade 11 year she mentioned the program to me and told me to look into it online. My teacher passed onto me an SRP Alumni's contact from my school so I could talk to her about her experience in the program. It was evident that the SRP Alumni I chatted with loved her experience and promised I would love it just as much. She was not wrong! These two factors greatly contributed to my interest in the program. I have no regrets and have enjoyed this experience very much!

One of my skills that has been most developed throughout this program is public speaking. I am a very shy person so having to speak with such a large group of new people was a big struggle for me. My peers in the program made it much easier to speak in the group as they were welcoming but still provided structured feedback. I definitely benefited from this.

I believe this WISEST program is very relevant because women and non-binary people are still underrepresented in STEM fields. The same goes for men in nutrition and nursing. There are many careers I have not considered because I am a woman and WISEST has opened up my mind to more opportunities. This program has also given me confidence to go into a class or field where I am underrepresented. We need to encourage young girls to pursue their science dreams.

I would like to thank my Principal Investigator, Dr. Philip Currie, and my supervisor, Mr. Howard Gibbins, for making this experience possible. I would also like to thank my supporters, International Paper and the UAlberta's Faculty of Science, for their support in my research. Lastly I want to thank the WISEST team for coordinating the entire program and providing such an amazing experience.

# Brooke Rapaich



## High School

Our Lady of the Snows Catholic Academy

## Lab Placement

Mechanical Engineering, Faculty of Engineering

## Project Title

Bilateral Symmetry of Different Anatomical Regions

## Final Project

[doi.org/10.7939/r3-y2pk-1x12](https://doi.org/10.7939/r3-y2pk-1x12)

## Supporter

Faculty of Engineering, and WISEST

My name is Brooke Rapaich and I attend Our Lady of the Snows Catholic Academy in Canmore, Alberta. Throughout my schooling years, math has always been my favourite subject and more recently I have found my love for biology. In the future, I would like to combine these two, which leads me to a possible career in biostatistics. I look forward to exploring STEM in post-secondary as well as into my career, and I have WISEST and the Summer Research Program to thank for fueling this passion of mine.

This summer, I was placed in a mechanical engineering lab at the University of Alberta and my project focused on methods that are used to evaluate the symmetry of the human body. This research is extremely useful in the planning and preparation for plastic or reconstructive surgery. When symmetry of an anatomical region is understood, it can make the pre-procedure process a lot quicker and more accurate, which overall can benefit the patient greatly. I conducted a literature review on the different methods used for different regions and found that there are numerous ways to find symmetry, and with new emerging technologies, 3D analysis is becoming much more common. With the help of new 3D software, models of the patient's bones can be created and this helps create a more correct and precise determination of symmetry for whatever area is being examined. This research will be useful to my lab as they continue to explore new ways to use or improve these methods.

All of my experiences and memories made this summer have been nothing but extraordinary. I gained so many valuable skills and had such a blast doing so. I am extremely thankful for all the mentor opportunities, PD sessions, and social events. I learned so much about what university life is like and got a peek into professional STEM careers. The professional development sessions were so helpful and I really enjoyed learning about things that are applicable to my own life! The social events were extremely fun and I loved getting to know everyone. Working with like-minded peers really boosts the experience and I'm so glad I got to build friendships with so many inspiring and brilliant young people.

I cannot express how amazing this program is. It is not every day you get to do real scientific research with working professionals alongside a support network of peers who love STEM. This summer has been amazing, and I feel so confident and excited to take on the next chapter of my life. This program has made me see STEM in a different way, and made me realize I am capable of whatever I put my mind to.

I would like to thank the Faculty of Engineering at the University of Alberta as well as the WISEST Advisory Board for making this all possible. I will be forever grateful for this once in a lifetime opportunity.

# Danielle Ratcliffe



## High School

Queen Elizabeth

## Lab Placement

Renewable Resources, Faculty of Agriculture, Life, and Environmental Sciences

## Project Title

Afforestation to Increase Soil Organic Carbon

## Final Project

[doi.org/10.7939/r3-dfvg-1907](https://doi.org/10.7939/r3-dfvg-1907)

## Supporter

International Paper

My name is Danielle Ratcliffe and I am from Queen Elizabeth High School in Edmonton, Alberta. Currently I have interests in biological and environmental sciences, and in the future I hope to pursue a degree in the Faculty of Agriculture, Life, and Environmental Sciences (ALES) at the University of Alberta. My placement with WISEST this summer enabled me to explore different methods that could be used to increase the storage of carbon in the soil and decrease greenhouse gases, which could possibly create a short term solution to climate change. I specifically researched the effectiveness of a variety of land-use changes, such as afforestation or conversion to pasture, to determine which method is the best solution to combat the rising quantities of carbon dioxide in the atmosphere.

My time in the Summer Research Program has taught me a wide variety of professional skills. Through the many opportunities we were given to meet with working professionals, I have learned how to ask meaningful questions and practice my networking skills. These experiences have been invaluable to me and have given me the confidence I need to be successful in future endeavours. This summer I have also learned how to better manage my time; with our busy schedule and research projects to be working on, I had to make sure that I was using my time effectively. I know that this skill will be very useful to me for the rest of my educational

and professional life. One of the most important things I have learned over these four weeks is about all of the vast career paths that exist in STEM. I have been introduced to so many options that I never even heard of before the program, and I have really enjoyed hearing about what day to day work life looks like for different professionals in STEM.

Before the Summer Research Program started, I knew that I loved science and math, but I wasn't sure if I had a passion for research. After being immersed into the research of my lab and learning more about how these projects run, I have gained an interest for doing research. Now I can potentially envision myself incorporating research into my career one day, and without this program I never would have realized that.

This has been such an amazing summer filled with fun learning opportunities, I have been provided with experiences that have allowed me to grow both personally and professionally. All of this wouldn't be possible without the hard work of the WISEST team, my Principal Investigators, Dr. Scott Chang and Dr. Edward Bork, my supervisor Cole Gross, and the generous support of International Paper. A big thank you to all of them for making my research possible this summer!

# Abigail Reardon



## High School

St. Andre Bessette Catholic School

## Lab Placement

Agriculture, Food and Nutritional Studies, Faculty of Agriculture, Life, and Environmental Sciences

## Project Title

Are There Differences in Muscle Fiber Characteristics Between Normal and Dark Cutting Beef?

## Final Project

[doi.org/10.7939/r3-jv1r-g655](https://doi.org/10.7939/r3-jv1r-g655)

## Supporter

Dr. Bruce Lab, and the Edmonton Chapter of Beta Sigma Phi

My name is Abigail Reardon, and I am a student from St André Bessette Catholic School in Fort Saskatchewan, Alberta. My research within the WISEST Summer Research Program included finding the number and predominant muscle fiber types in beef. We investigated this to further understand why dark cutting meat occurs in the beef industry.

The WISEST SRP has made this a memorable summer because of the opportunity to do real-life research and meet brilliant people at the same time. Despite the program being online, it did not stop our student researcher cohort from making life-long connections. I did not know that there were so many people my age that had the same passions towards STEM as me. In all of the networking sessions, WISEST has made me more confident in understanding how to put myself out there to make connections. Within the mentorship sessions, you listen to the first-hand experience of women in STEM and obtain informative advice to help you have success in your future. Throughout all of the Professional Development sessions, WISEST has taught me how to overcome being in an underrepresented field. Without WISEST I would not have known about all of the different opportunities there are that empower underrepresented groups. I now feel that with the skills that I have learned that I will not be going on the next chapter in my life blindly.

This program is very important because it reaches out to anyone who has a passion for STEM. I come from a small town and this program has shown me that you

should not be intimidated to put yourself out there. This program gives you advice on how to apply for scholarships, universities, and how to achieve success for your future. WISEST has taught me the many distinct career paths one can take in STEM. This is important when you do not know what you want to do in your future. Coming out of this program I have become reinvigorated to move onto the next chapter in my life because of the confidence that I have gained throughout this experience.

I would like to thank both Dr. Bruce and Dr. Roy for taking the time to help me grow as an individual by mentoring and teaching me transferable skills I can use anywhere. I would also like to acknowledge Beta Sigma Phi and the Bruce lab for their support of this amazing opportunity. Lastly, I would like to express my gratitude towards WISEST volunteers and coordinators for making this amazing experience possible.



# Sydney Roper



## High School

St. Peter the Apostle Catholic High School

## Lab Placement

Biological Sciences, Faculty of Science

## Project Title

Summary of the Distribution of Dinosaur Species Across Western Canada and Northwestern United States

## Final Project

[doi.org/10.7939/r3-6cy3-pq35](https://doi.org/10.7939/r3-6cy3-pq35)

## Supporter

Faculty of Science, and the Edmonton Chapter of Beta Sigma Phi

My name is Sydney Roper, and I am currently attending St. Peter the Apostle Catholic High School in Spruce Grove, Alberta. I thoroughly enjoy learning about biology, chemistry, math, and I am looking forward to taking physics next semester. I also play Senior basketball and handball at my school. My WISEST SRP research project this summer was conducted on the distribution of dinosaur species throughout western Canada and northwestern United States. My partner, Hayley Nicholl, and I found evidence to support the possibility that certain species may have cohabitation and possibly preyed on each other by looking at the geographic location fossil specimens were found at, and what layer of sediment they were found in.

I was motivated to apply to the summer research program because I knew that I had a great interest in science in general in school, and that in the future I would like to pursue some type of career in science. Before I applied to the program, I did not know all of the different careers available to me, let alone all the different branches within the different Departments at the post-secondary level. I applied to this program in the hopes of attaining a better grasp on the variety of options open to me, so that I could narrow down which courses I would like to take when I apply to university.

The program is so much more than just a research placement, it also provided multiple personal development sessions. Through these sessions I was able to develop valuable networking skills where I learned things like

how networking is more of a giving, than a receiving, relationship with people. The sessions also taught me the importance of body language during networking sessions, and how to most effectively build a network. From networking to being successful in job interviews, to preparing resumes, this Program prepared us for real life which was extremely beneficial.

I would like to thank my Principle Investigator, Dr. Philip Currie, and my Direct Supervisor, Mr. Howard Gibbins for welcoming me into their lab, the University of Alberta Faculty of Science, and Edmonton Chapter Beta Sigma Phi for their generous support of this Program, and the WISEST staff for such an amazing opportunity.

Overall the WISEST SRP has equipped me with essential skills moving forward to university life and for my career. Through the program I have gained like-minded and supportive friends, and memories that will last me a lifetime. Thank you WISEST for this experience.

# Ainslie Senger



## High School

Barrhead Composite High School

## Lab Placement

Linguistics, Faculty of Arts

## Project Title

Linguistics Department Summer Research Program 2020

## Final Project

[doi.org/10.7939/r3-b7m3-e064](https://doi.org/10.7939/r3-b7m3-e064)

## Supporter

Faculty of Arts, and WISEST

My name is Ainslie Senger, and I live on a farm an hour NorthWest of Edmonton. For years science and its various facets have been of personal interest to me. From the physics of construction to the complexities of biology and the reactions in chemistry, science astounded me. These interests led me to apply to WISEST in January. Thanks to the exceptional WISEST team's work, despite COVID-19, the program went forward, and included me! I was able to work with the incredible Alberta Phonetics Lab on Dr. Nijveld's bilingual spoken word recognition project.

Science has always been a significant and exciting part of my life. I live on a farm, where I am inundated with biology, physics and chemistry. Living in a place where science and how it works represented such an up-front role really sparked an interest in it for me and encouraged me to learn more. This transferred to my engagement in classes at school, and to being recommended for this program. Before this program, I could only name a handful of careers in Science, Technology, Engineering, Art and Math (STEAM), such as doctor or engineer. This program illustrated the diversity of careers in STEAM, as well as who works in them and the path they took to get there. That was what made it an extremely valuable experience for me. I would recommend it to everyone, even students who do not plan on working in STEAM. It allowed me to broaden my horizons and better comprehend the world around me, making it a great experience for anyone.

I am particularly proud of the collaboration skills I developed this summer. While working as a group in school, you can get into a rut of always being the leader, a follower, or having half of the group not even listening or contributing to the project at hand. However, through WISEST, I was able to interact with both students and professionals who were happy to be there and passionate about their work, a completely new experience. I was able to develop new skills and approaches when working with others, and I am proud of how much this summer transformed my outlook. From working with professionals in a formal sense to organizing the Show and Tell with my peers, I am appreciative of all the collaborative work I have done this summer.

This would not have been possible without the tremendous effort and support provided by my sponsors at the Faculty of Arts and the WISEST Advisory board, as well as my Principal Investigator and Supervisor, Dr. Tucker and Dr. Nijveld. Thank you for this wonderful opportunity and for a memorable and eye-opening summer.

# Eman Shayeb



## High School

Ross Shepherd High School

## Lab Placement

Mechanical Engineering, Faculty of Engineering

## Project Title

A Review of Intelligent Repair Processes for End-of-Life Components

## Final Project

[doi.org/10.7939/r3-y7f3-1d50](https://doi.org/10.7939/r3-y7f3-1d50)

## Supporter

Edmonton Chapter of Beta Sigma Phi, and Motorola

My name is Eman Shayeb, and I will be entering my last year of high school in September of 2020. I love my Math and Physics classes, and a particular area that interests me is Outer Space! In the future, I hope to become an aerospace engineer. During the Summer, I had the pleasure of conducting a research project on different applications of computer vision for damage detection, which can be applied in the development of technologies that are able to scan, detect, and repair a damaged object, all in real-time.

The Summer Research Program caught my attention because of its mission to create an inclusive space for gender minorities in STEM. As a woman interested in the mathematical sciences, it can sometimes be difficult to feel like I belong in such a male-dominated field. The fact that the SRP identifies the importance of representation in STEM, and works towards gender equity encouraged me to apply because I knew that I would be able to work in an environment where I am valued and listened to. I also applied to the program because I knew that I would meet like-minded peers, and mentors who want to share their experiences and advice as gender minorities in STEM.

I learned many things this summer including how to identify and analyze relevant scientific literature, and how to communicate my findings in a clear and efficient manner. I was also presented with useful insights into how to interact with professionals in my fields of interest, and how to approach day to day problems as a critical thinker, and as a young person in STEM. More specifically

to my project, I learned the basics of computer vision applications in damage detection and the inner workings of detection architectures. This experience has grown skills I need as I look to pursuing education in engineering.

Based on my experience as a WISEST Student Researcher, I believe that this program holds a lot of significance for everyone in STEM. The SRP advocates for the inclusion of gender minorities, emphasizes the importance of diversity in STEM, and highlights the benefits that this presents to all parts of our lives. WISEST reminds us as student researchers and gender minorities that we belong in STEM, and that we each hold the power to make meaningful change.

I had an absolutely amazing experience with the SRP, and I would like to thank the WISEST team, my Principal Investigator, Dr. Rafiq Ahmad, and my Supervisors, Ms. Habiba Imam and Ms Rabiya Abbasi, from the University of Alberta LIMDA Lab. I would also like to share my gratitude to supporters of WISEST, especially Motorola and the Edmonton Chapter of Beta Sigma Phi. Thank you for making this opportunity for high school students possible.

# Eyasu Yakob



## High School

Archbishop MacDonald High School

## Lab Placement

School of Public Health

## Project Title

Credibility and Popularity of Nutrition Influencers' Websites

## Final Project

[doi.org/10.7939/r3-56h4-yz33](https://doi.org/10.7939/r3-56h4-yz33)

## Supporter

School of Public Health, and WISEST

My name is Eyasu Yakob, and I am a student from Archbishop MacDonald High School in Edmonton, Alberta. During school, I am very interested in my biology and chemistry courses, and enjoy participating in speech and debate outside of classes. I am exploring studying sciences in university and desire a career that could allow me to continue my interests with science and research, while giving me the opportunity to make a tangible, positive impact on society.

This year, I worked in a nutrition placement with the School of Public Health at the University of Alberta, where I had the honour to work under my Supervisor, Dr. Melissa Fernandez, and Principal Investigator, Dr. Kim Raine. My placement involved assessing the credibility of nutrition influencers' websites, in relation to their popularity online. We found a strong negative trend between the credibility and popularity of nutrition influencers, where influencers with low credibility websites tend to have a nearly ten times greater following when compared to influencers with high credibility websites.

I was first introduced to WISEST through my biology teacher, and after hearing the great experiences of last year's SRP participants, I did some research and decided to apply! I have always been interested in science, and as I was considering pursuing disciplines underrepresented by my gender, the SRP was a perfect fit for me. Admittedly, given the massive body of applicants, I felt rather doubtful regarding my chances of getting into the program. However, I did not let these doubts faze me and I persisted,

spending hours polishing up my application. In the end, my dreams came to fruition, and I was successfully selected as one of twenty-one student researchers in this year's cohort.

The WISEST Summer Research Program offers you an unparalleled opportunity to explore STEM pathways through conducting real-world research and receiving mentorship from industry professionals. I would strongly recommend this program to any student considering a STEM career in a field underrepresented by their gender. This program is the perfect opportunity to get your foot in the door and explore what STEM has to offer. Speaking from my own experiences, the SRP has simply been fantastic: from the professional development to the invaluable research experience, the SRP provides you with opportunities you can't receive anywhere else as a high school student.

I would like to extend a deep thank you to the WISEST Team and everyone else who helped run this program. Thank you to all those who support this opportunity, especially the WISEST Advisory Board and the University of Alberta School of Public Health. I would also like to thank Dr. Kim Raine and Dr. Melissa Fernandez for welcoming me into their research team. I had an amazing summer in their lab team!

# Olivia Zheng



## High School

Sir Winston Churchill High School

## Lab Placement

Mechanical Engineering, Faculty of Engineering

## Project Title

Surface Disinfection Using UV Light – Emerging Technologies and Applications

## Final Project

[doi.org/10.7939/r3-wfv1-sh05](https://doi.org/10.7939/r3-wfv1-sh05)

## Supporter

WISEST, and Motorola

My name is Olivia Zheng and I attend Sir Winston Churchill High School in Calgary. At school, my favourite subjects are math, physics, biology, and English, but I am really an avid learner of almost anything. I love to work with numbers, and I also love learning about how the world around us works. I especially love to read about the many different technologies that have been developed to solve various problems in today's world; I find both them and the people behind their development extremely impressive! In the future, I hope to be able to contribute to society through STEM as well. Although I am not sure of an exact career path yet, engineering and computer science are both fields that I have taken an interest in. I believe that they both have the ability to change the world for the better!

My placement this summer was within the mechanical engineering lab: LIMDA (Laboratory of Intelligent Manufacturing, Design and Automation). I researched various UV light disinfection technologies for air and surfaces, as well as other smart technologies such as robots that may be incorporated into UV light disinfection. This project was both very interesting and fulfilling, especially considering the potential that UV light disinfection has in helping the world tackle the current COVID-19 pandemic.

Through the WISEST SRP, I gained valuable experiences in academic research, and grew as a person. Meeting with so many amazing mentors and fellow interns really inspired me to do even better in my own endeavours. I practiced many skills such as networking and communication, which helped to increase my confidence. Seeing all of the

mentors — successful, smart, and capable women — in their respective STEM fields gave me confidence in my own abilities to succeed as a female in STEM.

I highly recommend the WISEST Summer Research Program to anyone who is interested in a field where they are underrepresented. It is an incredible opportunity that can help you to develop both your interests and yourself. You will be exposed to many different new possibilities, which could very likely change your outlook on the future! Furthermore, the connections and memories that you make with your fellow interns are truly irreplaceable (even in an online format like this year).

This summer has been one that I will forever be grateful for. Thank you to WISEST for the very existence of this program, and especially to this year's WISEST team for making our virtual experience as amazing as it was. Thank you to both WISEST and Motorola for their generous sponsorships. In addition, thank you to the LIMDA team for welcoming me, and to both Dr. Rafiq Ahmad and Ms. Rabiya Abbasi for all their mentorship and support. Finally, thank you to my family, friends, and teachers for their constant support and belief in me.