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the Alworth REPORT
ALWORTH MEMORIAL FUND NEWSLETTER

Spring 2025

SPECIAL EDITION

Finding your path can be challenging

Walking it can be even harder –

especially when it doesn't fit the norm.

Elijah Kramer took a gap year after graduating from Duluth East High School in 2022. He was awarded the Alworth Scholarship his senior year, but was unsure about which STEM major or school was right for him. He deferred the award for a year to travel abroad. He worked as a carpenter, campground manager, in a nightclub and a restaurant, experiencing different cultures, lifestyles, and points of view.

This experience paid off. "I realized I absolutely wanted to go to college," says Eli. "I saw how hard it was to make money and raise the funds for my education. I got a perspective of working jobs I don't quite enjoy. I saw lots of things I do want in a career and in life overall. I saw college was the best way for me to get to where I want to be."

Eli returned to the States in Fall 2023 and enrolled in the University of Utah Honors College as a mechanical engineer major.

During his first year he served as a team lead in the Bench to Bedside biomedical engineering entrepreneurship competition. Teams of students create a prototype of a novel device and compete with a pitch for further funding. Their project was to create a pressure-sensing insole for patients who have a weight bearing restriction.

"Let's say you break a leg and can only put 20% of your weight on your leg. There's no way to quantify that amount," says Eli. Their prototype, an affordable device attached to the shoe, alerted the patient when the restriction was met or exceeded. It could change as the patient progressed in rehab and could put more weight on their leg.

More than 35 teams competed, judged by a large panel of successful start-up founders.

Though Eli and his team didn't make it to the next phase, they learned a lot, working with clinician mentors to research the market, build a prototype, and find ways to fund a start-up.

"It absolutely changed my freshman experience getting involved in something so big like that, right off the bat," Eli says. "I made connections with people who were actually doing this as a career, as well as other students. I got a more accurate picture of what mechanical engineering is like.

"It's worked well for me to not take a normal approach to university and intentionally avoid pressure to get it all done at once. Lots of people could benefit from taking periodic breaks to reflect on where they're at. I'm grateful to everyone in my life, especially my parents and the Alworth Foundation, who have encouraged me to do so.

"The Alworth Scholarship has been a huge blessing, with both generous financial support and their flexibility in working with me to postpone my scholarship was a big deciding factor in whether I went to college. Now, here I am. It's a clear example of the Foundation's values, caring about my success and believing in what us students can one day achieve." ■

▶ How To Apply for $24,000

Go to our website to fill out the application.

www.alworthscholarship.org

Applications are accepted from November 1 to January 15.
Recipients receive $24,000 distributed over eight semesters providing they maintain our eligibility requirements in a STEM field of study.

Dream it. Achieve it.

Sylvia Berka

The Reality of Navigating Imposter Syndrome

Imposter syndrome is the persistent doubt that one's success is deserved or has been legitimately achieved by effort and skill, especially among high achieving individuals.

Alworth Scholar Sylvia Berka knows what it's like to struggle with imposter syndrome, despite being in her final semester of a bachelor's degree in Aerospace Engineering at the University of Minnesota Twin Cities, serving as a team lead for her college's Formula SAE student racing team, and holding an internship and research assistant position.

The Grand Marais, Minnesota native knows what it's like to feel that intense self-doubt. She also knows how to move through it with peace and confidence.

"I don't think it will 100% ever go away for me," Sylvia admits. "Anybody who's in a competitive field, you're constantly going to be comparing yourself to others, thinking, 'oh gosh, I'm not good enough to be in this role'."

Reality checks, transparency, and community connection are three major ways to move through imposter syndrome, Sylvia says. For example, Sylvia joined the engine sub-team of the Formula SAE student racing team in her first year of college. In her sophomore year, she was elected to the role of Engine Lead, and imposter syndrome kicked in–hard. "Mine was particularly intense because I got a leadership role as a sophomore. My co-leaders were juniors and seniors. I was always asking myself, Am I doing a good job?"

A fellow teammate reminded her that she was elected to the position by team members who had confidence in her skills. "You have to remind yourself you are your biggest critic–always."

Sharing her feelings with a friend on the team, Sylvia found that many of her fellow students also feel that self-doubt. "It can be eye opening. You realize they may feel insecure, when you think they're amazing students."

In her junior year, Sylvia had to move past self-doubt to get special permission to take a 5000-level graduate course on gas turbines. It turned out to be one of her favorite classes because it focused on the future of jet engines with alternative fuels, a special area of interest for her.

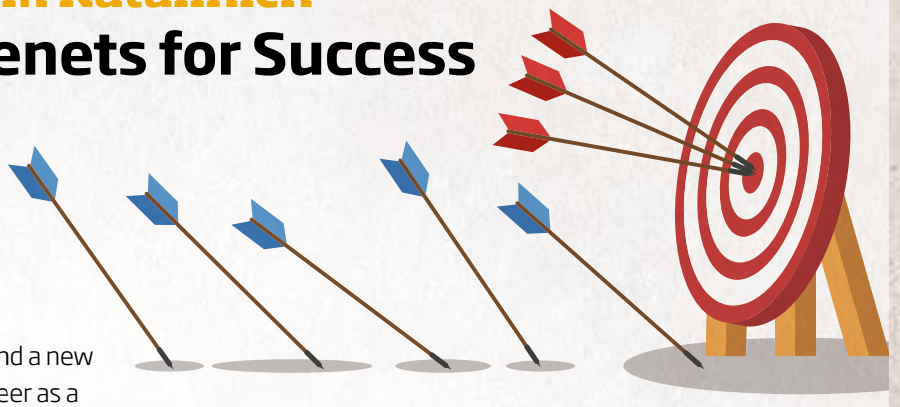
Sylvia also works as a research assistant at the Thomas Murphy Engines Laboratory on campus, helping with a project to run a 6-cylinder diesel engine on gaseous ammonia. "They're trying to get engines to run on more environmentally feasible fuels. The biproduct of ammonia is water and nothing. I have learned quite a bit about what the future of combustion engines and alternative fuel looks like. That's exactly what I want to do with engines going forward."

Moving through imposter syndrome to pursue her interests also keeps Sylvia rooted in gratitude. "The fact that I do that research at this school is insanely lucky," she says.

Education is one of Sylvia's key values. "I've discovered so much about myself in these past four years. It has definitely opened me up, getting this educational experience. That's why I'm so grateful for the Alworth scholarship. It has definitely made my academic life so much easier, not having to stress about finances and just being able to focus on school and making the most of this time here. I know a lot of students who have to work four days a week for rent. I'm fortunate to be able to spend that time studying, or with a club, or with other educational activities." ■

Tom Katalinich

Three Tenets for Success



Tom Katalinich embraces his mistakes. It's one of his key tenets for success.

"Don't be afraid to make mistakes. People always say that, but I've found it to be very true. I've been fortunate enough to make some major whoppers. It's considered part of the learning process."

Regrouping and coming back with lessons-learned and a new strategy can make all the difference, as Katalinich's career as a chemical engineer and team leader proves.

It's the same strategy he applied to receive the Alworth Scholarship, which he didn't receive the first time he applied as a senior at Nashwauk-Keewatin High School. After a year in the pre-engineering program at Hibbing Community College (now part of Minnesota North College), he reapplied. This time, the award came through and he applied to the University of Minnesota's chemical engineering program. "Coming from a small town, going to the U was a big step. There were times I really struggled. My grades weren't good at first, but I stuck it out." His work paid off, and the Alworth was renewed for his remaining three years of college.

"The award was very impactful for me. I came out of college with no student debt."

He was hired as a "new engineer" at Cargill just months after receiving his chemical engineering degree in 1985. Today, he is the Worldwide Oilseeds Crush Manufacturing Technology Leader with Cargill, Inc.

From his first role at Cargill, he advanced quickly. "I'd round out in about three years, and they'd tap me on the shoulder and invite me on to the next role." In his first twenty years with the company, Katalinich and his family moved eight times for new positions. "I was presented with new opportunities and accepted them. There was more responsibility with each of these steps. I was up for the challenge."

The trend is a testament to his second tenet for success: Be a lifelong learner.

"Don't stop learning. It's truly an important element. Be curious and follow your interests.

At my first plant tour in Sioux City, Iowa, I asked, what does a soybean look like? I grew up in Northern Minnesota. We had taconite mining, pulp, and paper. You don't see soybeans up here. I was dying to see one."

Today, Katalanich is a global expert in – you guessed it – soybeans. As the manufacturing technology leader for the global oilseeds processing of Cargill, he supports technical advisors at as many as 50 plants around the world that process oil seeds.

He attributes much of his success and career satisfaction to his natural curiosity. "I always ask why or how something is done or why we do it that way."

This curiosity extends to learning about people, too. From his days in high school sports (football, basketball, baseball), to supporting engineers around the world, Katalinich values being a part of a team and learning and teaching others.

Which leads into his third tenet for success: Have fun.

"It's easy to get caught up in the 'job' and be too focused on the task at hand, especially for achievers," he said. "It's important to enjoy the journey and have fun along the way, not just for your own enjoyment, but for the people you're with. Having fun with co-workers and enjoying them is an important part of the job." ■

Embrace mistakes, live curious, and have fun –
the perfect road map for an Alworth Scholar.

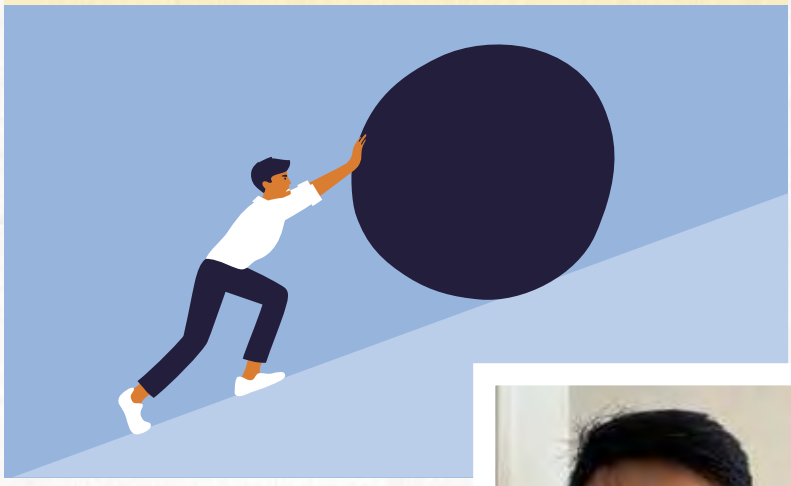
Isaac Arli

What is Passion?

We hear it all the time. Follow your passion. To many, that means following what they love, something fun, or something that brings them joy. But for Alworth Scholar Isaac Arli, a student at the University of Queensland in Brisbane, Australia, passion means something more.

"The Latin meaning is to suffer, to endure," said Arli. "I thought that was really interesting. The things you want to do shouldn't just be all about the happy part. That's part of it, but are you willing to suffer for it and enjoy it? That's usually what makes it meaningful. We endure a lot and learn from that."

"The Latin meaning is to suffer, to endure," said Arli.



Arli speaks from experience.

A 2021 Duluth East High School graduate, he completed his first year of college at the University of Minnesota, majoring in psychology with a neuroscience focus. When his family returned to Australia, where he had grown up, he transferred to the University of Queensland. There, he enrolled in an elective introduction to programming and software engineering course, which turned out to be one of the hardest courses he had ever taken.

"I didn't realize it was such a steep learning curve. I was struggling because I was being introduced to a whole new world. I spent multiple 10-hour days on a single assignment. But in the end, I learned more than I had ever learned in a course. I knew I was growing as a student."

The challenge ignited his passion. It also taught him a great deal about how he learns and what he must do to succeed. "I'm naturally quite a slow learner. If someone tells me a concept, I don't register it initially. I have to put in more effort than others."

In the second-year programming course, Arli was prepared to struggle and spend additional time and effort. He attended extra help sections and participated in an online discussion board for the course. The effort paid off, and he found himself actually ahead of the game a whole two weeks on a particular assignment. He then spent his free time helping other students who were struggling. He not only did well in the course, but the following semester, he applied to be the course tutor (a teaching assistant) and got the job.

He approaches students as he would like to be approached, explaining concepts at a basic level, with great detail, and at a slow pace. "Being able to explain concepts and watching other people have a lightbulb moment is quite rewarding."

Arli is on track to graduate in 2025 with both a Bachelor of Science in Psychology and a Bachelor of Computer Science specializing in programming languages. Earning a PhD and becoming a professor is one possible career path, though first he would like to work as a software engineer and manage a team, drawing on his psychology background and his love for teaching.

Whatever he does next, Arli is ready to endure challenges to pursue his passion. "Sometimes we don't want to put in the extra work, but sometimes that's just how it's going to be. Once you accept that, there's always a way through. If you really believe in yourself, you can just give a little more." ■

Hailey Ronning

Small Steps Can Change the Big Picture

As children, Alworth scholar Hailey Ronning and her twin sister Hannah loved helping their mother in the garden of their Hoyt Lakes home. "One of my favorite memories was planting carrots," Hailey recalls. "We spilled carrot seeds in the flower beds, and we had carrots popping up everywhere!"

Today, both Hailey and Hannah are Alworth scholars.

Hailey's love for horticulture and wildlife ecology was fortified in high school during the quarantine, when she took classes and worked at the Mesabi East Environmental Education Center (ME3C). "I really loved working with plants, and the summer school kids coming through, and the farmers' market – seeing everybody come together and get interested in the outdoors and growing things."

The experience solidified her commitment to helping the environment and people, which directed her college and career path. After graduating from Mesabi East in 2022, she went on to study Wildlife Biology at Bemidji State University. As an undergraduate, she worked with the sustainability office and "fell into" the role of activity and event planner. She prioritized sustainability and outdoor programs, like the Critter Crossing project, a collaborative effort to create flip-up road signs for Beltrami County to alert drivers when animals like turtles are on the move.

Thanks to PSEO courses she took in high school, Hailey earned her bachelor's degree in just two years. Since she only used a portion of her Alworth scholarship, the remaining balance can be applied toward a master's degree in the next three years.

While researching the next right step in graduate programs, Hailey lives her commitment to people and the planet working at the Great Lakes Aquarium and Hartley Nature Center in Duluth. She describes taking her big desire to change the world in manageable, daily actions. "I would really encourage having those career goals and expectations, even if they seem out of reach," she says. "If you work one step at a time and do it in your own way, you might be able to make a bigger impact that way." ■

IN MEMORIAM

Irene Julia Kosiak Perpich, M.D.

October 3, 1931-July 3, 2024

Irene Julia Kosiak Perpich, M.D., one of the first Alworth Memorial scholarship recipients, died July 3, 2024 at the age of 92. Dr. Perpich was born in Chisholm on Oct. 3, 1931.

The Alworth Scholarship supported her work as a student at Hibbing Junior College and the University of Minnesota, where she received her doctorate in 1956, one of just six women in a class of 115. After a residency in San Francisco, she returned to the U of M to complete an Anesthesiology residency. She married her classmate Dr. Tony Perpich in 1960 and lived in Virginia, where she was the first female physician at the Municipal Hospital. In 1975 she moved to Minneapolis and became the first female faculty member of the University Anesthesiology Department. She retired in 1998 after 15 years at Minneapolis Veterans Hospital. She is predeceased by her husband of 57 years. ■

Marshall H. and Nellie Alworth
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Patty Salo Downs

I enjoyed leading with compassion...

Over the past 19 years, I have thoroughly enjoyed connecting students and parents to the Alworth Scholarship opportunity, visiting high schools, attending scholarship nights and awards programs all across our vast 10-county region.

It's been amazing to witness all the opportunities that the scholarship afforded our recipients. Whether it's participating in study abroad, installing a water distribution system in Kenya, engaging in research and other humanitarian efforts, it's heartening to see how Alworth scholars have contributed in ways of benefit to humanity; just as Marshall W. Alworth envisioned.

Since I started in 2006, we've accomplished a lot. We've reviewed 3,691 applications, and granted over $26 million to 1,405 students. In 2017, the Alworth Reporter newsletter was launched showcasing 60 recipients and their accomplishments. In 2024, we launched the Alworth Transfer Pathway Scholarship that is dedicated to area community college sophomores to pursue a bachelor's degree in a STEM field.

On our website we established a video library with 50 interviews of Alworth scholars, including one of our first recipients. We've had four facelifts (rebrands), and it's been a lot of fun seeing evolution!

What I am most proud of is our compassionate approach in working with our recipients. In addition to celebrating their successes, I was pleased to offer a compassionate (Mama Alworth) ear for students when they struggled. Wanting every student to be successful was at the very core of my approach.

While Marshall and Margaret Alworth never had children, they created a family of Alworth scholars. I am beyond grateful for the opportunity to serve as the executive director of this amazing foundation. It has been a rewarding experience and one that I will forever treasure.

Thank you all for your friendship and support. ♥

Open A Closed Door

The Alworth College Transfer Pathway Scholarship

https://www.alworthscholarship.org/collegetransfer.html

While some high school seniors know they want to pursue a career in STEM, many more graduate without a clear sense of their future career path. Some choose to attend community college before heading to a four-year institution. Others enter the work force to gain experience before deciding an education path.

In February of 2024, The Alworth College Transfer Pathway Scholarship was launched to support students completing an associate of science degree from a designated two-year community college, to complete a bachelor's degree in mathematics, science, medical or engineering fields of study.

In the first year of the new scholarship, seven awardees each received $12,000 to use toward their final two years of schooling at a four-year university. The paths of these scholars are truly inspirational. Here, three of the first recipients share their journey toward achieving success.

SCOTT WAARA

"I'm excited, happy, and it's contagious."

Scott Waara attended Lake Superior College right after graduating from Duluth's Harbor City International School in 2011. Without a clear direction for his career, he withdrew near the end of the third semester. He entered the work force and started a family. But he knew he wasn't living the full life he was meant to have.

"I wasn't being the person I wanted to be," Scott says. "I was working a job that supported us well, but I didn't feel really happy with what I was doing. Even though I tried not to let that affect my surroundings, you just can't be your complete self until you're doing what you want to be doing in life." Besides, he says, he wanted to live the values he wanted for his children, and that meant pursuing his passion and seeking higher education.

He watched online videos and took surveys for discerning a purpose and path. "I saw one video that pointed out three things. Look for what you're good at, what will pay for the life you want, and what you're passionate about. And I thought about whatever you love to do you'll be willing to do for free. I knew I loved the environment and felt the urge to protect it. After working around engineers in another job, I knew from seeing what they do, it has challenges, but I felt I was capable of doing something of that nature, facing problems and working in a team to find solutions."

He decided to pursue a degree in Environmental Engineering and returned to college, attending what is now Minnesota North College – Mesabi (previously known as Mesabi Range Community College) in Virginia in the spring 2022 semester. His children were six and nine years old. He then transferred to Michigan Tech where he is working toward a bachelor's degree in Environmental Engineering.

Along with savings he built up while working full-time, as well as some current part-time work, the Alworth Scholarship gives him the financial support to focus on his studies and care for his family. "My academics are pretty rigorous. The Alworth scholarship certainly helps to supplement my inability to maintain full-time employment while attending college full-time due to the rigorous schedule," he says.

Scott's children are now nine and twelve years old and remain an important part of his educational journey. "Witnessing my children's curiosity and enthusiasm for learning reignited my own passion for education, motivating me to persevere through moments of doubt and exhaustion," he says.

And that support and inspiration are vital to keeping the positive mindset he has cultivated to achieve his degree in spring 2026. "The stories you tell yourself about your situation become what you are in the world," he says. "Prior to this, I was always telling myself negative stories about how I wasn't good enough, couldn't accomplish what I wanted. As I began to surround myself with positive influences, my mindset shifted, and I became a much more positive person."

That change, plus the work to find and pursue his passion, have made a huge difference for himself and those around him. "Now, I'm excited, happy, and it's contagious." ■

JULIE SWEEP

"I thought my ship had sailed."

Julie Sweep first considered the career of nursing as a high school senior at Hibbing High School in 2007 when her parents were in a serious motorcycle incident. She saw the care they received at Essentia and was inspired. But she had committed to the University of Minnesota – Morris, and they did not have a nursing program. So she went into anthropology and biology. It wasn't a good fit, she says, and she left the program to work as an EMT.

At that time, she didn't consider returning to school. "I thought my ship had sailed because I have student loan debt from my first go around."

During the pandemic, Julie lost her job and applied for the dislocated worker program. She went back to school at Minnesota North – Hibbing and quickly realized "I had a knack for nursing." While there, she saw a flier for the Alworth College Transfer Pathway Scholarship. Years before, her brother Seth had been an Alworth Scholar and studied computer science. "It was the day of the deadline," she recalls. "I went home after school and applied. I got it done in one day. I'm so happy I applied!" The scholarship is now helping her complete a BSN at Bemidji State.

Besides her education, Julie's career path as a nurse is coming full circle as she now works as a nurse at the same hospital where her parents received care. As an adult acute care med surg float nurse, she works on many different units. "It's a mixed bag," she says. "I could be anywhere from urology to cardiology, oncology, surgery, general medicine. I find out my assignment about an hour beforehand. It's kind of cool to never know where you're going to be the next day. You get a lot of experience."

Helping people brings her joy. "Nursing is definitely a calling. It's an honor and a privilege to be able to take care of someone in a very vulnerable time in their life," she says.

Because she had so many credits from her first college experience, Julie is completing her BSN in just one year. She is able to use the second year of the scholarship toward her next goal: a master's degree. "I'm so thankful to have been able to receive the Alworth Scholarship. If I hadn't received it, I don't know if I would have been able to move on with my education."

She advises others to take the risk as she did and apply. "I feel like a lot of people have self-doubt and they're their own worst critic. Well, I don't fit the mold. It's worth it just to give it a shot." ■

GRANT EWEN

"It's changed how I see life and really opened my mind."

Grant Ewen, a 2022 graduate of Grand Rapids High School, was interested in how things worked from a very young age. "I was always working on things like cars and motors. I like taking things apart." He credits his high school classes, his teachers, and counselors for helping him see that mechanical engineering would be an interesting and satisfying career path.

Grant began his study at Minnesota North College – Itasca (formerly known as Itasca Community College). In his sophomore year, he was eligible to apply for the Alworth College Transfer Pathway Scholarship and received the award. He is now at North Dakota State University pursuing a degree in mechanical engineering. "It's going really well," he says of the transition, which was streamlined by the curriculum at Minnesota North and the assistance of the Alworth Scholarship, which has allowed him to focus on his coursework. "I still work a little, but I don't have to worry about that, which is really nice. I'll have little or no debt when I'm done with school."

A materials class has been among his favorites. "We went through all the steps, determining what material would be best for what you're working on. Material properties, strengths, hardness, all the things you'd have to think about. That was really interesting to me." While he would have an initial idea for what material to use to make something, the class widened his perspective. "You can look at the math and all this testing people have done for all these years, and see oh, this is actually the best choice, or this is a better choice, it's cheaper or better or whatever it is."

An internship at a medical injection molding plant has given him direction on a possible future career path. "Working on massive machines is something I'd enjoy," he says. "We got to work on all the steps of the process, which I really liked – designing, making, and putting it to use – not just being one little step in the process." After that internship, Grant says, "I couldn't look at a plastic part without knowing how it was molded, all the injector pin marks, everything. I never thought about it before then."

Studying mechanical engineering has expanded his whole perspective, he says. "It's changed how I see life and really opened my mind. Talking to other people, like classmates working on a project, helped me come up with ideas I never thought of, to make something easier or better in a certain setting." The opportunities in mechanical engineering motivate him every day. "Working at a place where you get a lot of creative freedom, where you can come up with ideas – I like doing that the most. It never gets boring." ■

Oleaze Okoro

Lifelong Dreams Can Come True

Oleaze Okoro had a lifelong dream to go to Harvard.

Her family lived for a time in the Boston area, and Harvard Medical School became her dream. "It was something my dad encouraged for me. I had this assurance my whole life it was going to happen. I never considered anything else."

She worked hard toward her goal. Her love for mathematics grew in the accelerated University of Minnesota Talented Youth Mathematics Program. Her love of language flourished on the speech team and in student publications. Her love for people led her to serve in student government, volleyball, orchestra, and many other activities. Okoro won the Harvard Book Prize Award in her senior year at Duluth East High School. In the fall of 2024, her dream became reality when she entered Harvard with the freshman class.

What happens when you achieve your lifelong dream and launch into a new reality? Everything can feel new and overwhelming. Yet there is so much to be learned, so much opportunity for personal growth. This new beginning, as Okoro can attest, can be very challenging. But she has embraced it with determination, inner strength, and a natural curiosity.

At first, Okoro knew no one at Harvard and longed for the strong network of family and friends in Duluth. Because her identity as a Nigerian woman and her faith are vital, she joined affinity groups to build new relationships in the Association of Black Harvard Women and Harvard University Faith in Action, a Christian fellowship group. She also changed her nickname from Ola to Ozzie to better reflect her identity as a Nigerian woman when introducing herself to new people – something she did daily.

Okoro pursued her passion for math and science by enrolling in Life Science 50, a year-long double course combining science and math. The class is limited to 40, and students get in via lottery system. "It's the hardest class I've ever taken. It's ambitious in concept, and it's good. We covered everything at a high level and very quickly. It's rewarding because it's hard."

The rigor of the course meant she had to learn how to study within the new schedule of a college student. "Time is way different. Suddenly two a.m. is the new 11 p.m. I watched people who were staying on top of their schoolwork, and very social and in activities – and I realized they were not sleeping. I started to choose to sleep. I work better in the morning. I can go to sleep and wake up early. My reward is the day. That's why I like sunrises more than sunsets." The strategy worked, and Okoro did well without ever pulling an all-nighter.

She also prioritizes fun and social connections. She became an ambassador for "BUBBL'R," a popular drink in Minnesota and Wisconsin, unknown to many of her Ivy League classmates.

Of her many interests, it's people who are the most important for Okoro. As a pre-med student, she strongly believes that a doctor should get to know her patients. Knowing oneself is just as crucial. Attending Harvard has given her the opportunity to dig deep and learn more about who she is and how she wants to contribute to the world. It starts with having a dream.

"Going to a private school is not the only indicator of success, but if that's your goal, believe that you can, and that you have something to offer." ■

Aleksandra "Sasha" Gavrilova

"It's nice to do things that have impact."

The search for knowledge through inquiry was among Mr. Alworth's dearest values. In the last 75 years, Alworth Scholars (more than 5,390 students in Northeastern Minnesota) have pursued STEM research in many vital areas, from public health to environmental engineering. Currently, Alworth Scholars are conducting research in cancer genetics, the biomechanics of body movement, robotics and autonomous vehicles, physical therapy, wound healing, and alternate fuels, just to name a few.

Aleksandra "Sasha" Gavrilova is among these scholars, striving to apply her love of math to benefit people directly.

The 2024 East High School graduate is currently completing her first year at Denison College in Grandville, Ohio, where she was selected as a 2025 Battelle Science Intern and is a student of Dr. May Mei, Professor and Chair of Mathematics. Sasha chose to pair her love of math with biology for the intellectual challenge and the potential for direct applications in the world.

"Biology makes my brain useful," she says. "A lot of stuff pure mathematicians work on doesn't have a use for the general public. Not to say it doesn't have merit – it's still important for us to know these things. But it's nice to do things that have impact."

Sasha credits the University of Minnesota Talented Youth Mathematics Program for illuminating her innate love of math. "I've always been interested in math, and I was allowed to deeply engage with it for three years. I thought, well, there's nothing else I could like as much as this. I decided to keep going. When other people dropped out of the program, I wanted to continue – that says a lot about what I want to do." She engaged in pure and applied math coursework and training, including Dr. Harsh Jain's graduate level mathematical modeling course at UMD during her junior year of high school. "I asked if I could do research with him and he said, 'Sure!'" Ever since, they have been working on a mathematical model for cholera.

Sasha's research path continues this summer when she will assist Dr. Trachette Jackson at the University of Michigan with mathematical modeling of intratumoral heterogeneity using virtual cohort analysis.

The research uses ordinary differential equations to model changes in systems over time. "These can be any kind of systems," says Sasha. "Synthetic systems, or a hurricane, or how cancer grows. There are a wide range of applications. I find it really fascinating how you can alter them and design variables and equations to help find solutions for what arises in the world." The research she's engaged in this summer will lead to better, more effective care for people with breast cancer.

"I am first and foremost a mathematician and enjoy that, and the type of math on these projects really interests me," she says. "And it helps people." ■

Mr. Alworth's Love of Research

In 1949, Marshall W. Alworth established the Alworth Scholarship to provide funds to students of high academic ability with financial need to pursue studies in mathematics, the sciences, engineering, medical, and especially research - he loved research. Mr. Alworth believed that these fields of study offered the greatest potential to create new ideas/products that benefit humanity. ■

To learn how Alworth Scholars' research projects are addressing, climate change, alternative fuels, cancer, and more, go to our website, click on the "About" tab, and then click on the "Alworth Research Scholars" graphic in the right column.