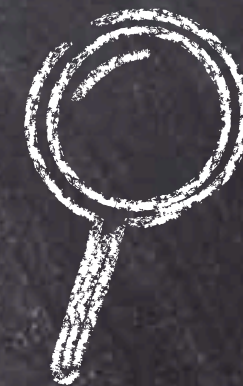


# ALWORTH RESEARCH SCHOLARS



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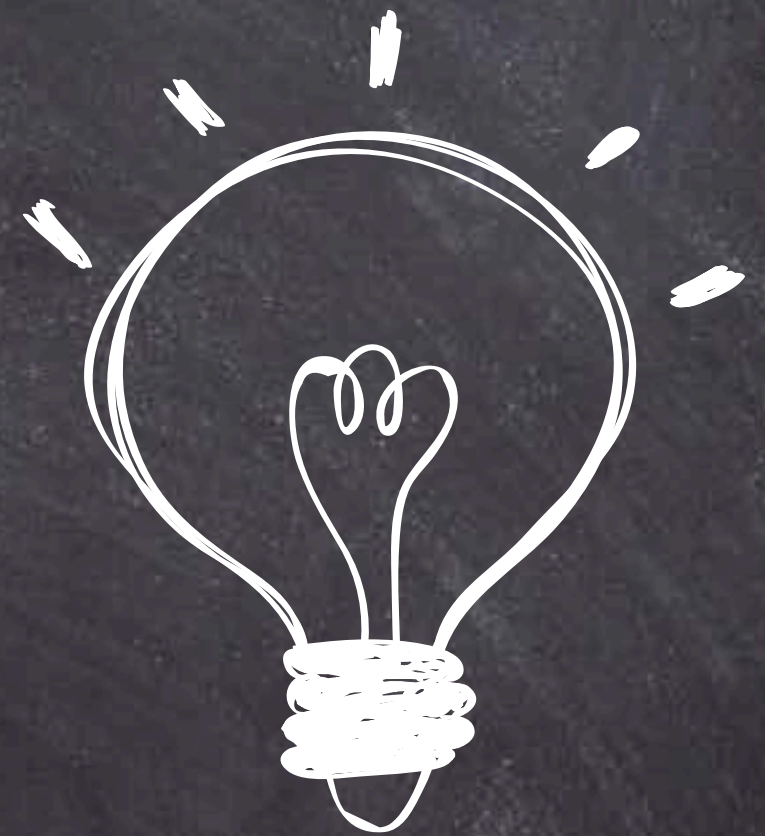
# DID YOU KNOW...



## THE ALWORTH FAMILY LOVED RESEARCH.

In the last 75 years, the Alworth Scholarship has granted a total of \$57.8 million in scholarships to more than 5,390 students in Northeastern Minnesota.

Here are a few students whose passion for STEM has led them to pursue exciting research projects that tackle things like climate change, public health, and more.



# LINDSAY STEINBRECHER



**2023 ALWORTH RECIPIENT**

High School: Hibbing

College: Bemidji State University

Major Field: Exercise Science



## **RESEARCH:**

- Biomechanics of Body Movement in Sports
- Created a comprehensive year-long fitness program on the biomechanics of competitive ballroom dance. This required a firm understanding of human anatomy and physiology and how different types of exercise impact the body over time.

# LINDSAY STEINBRECHER

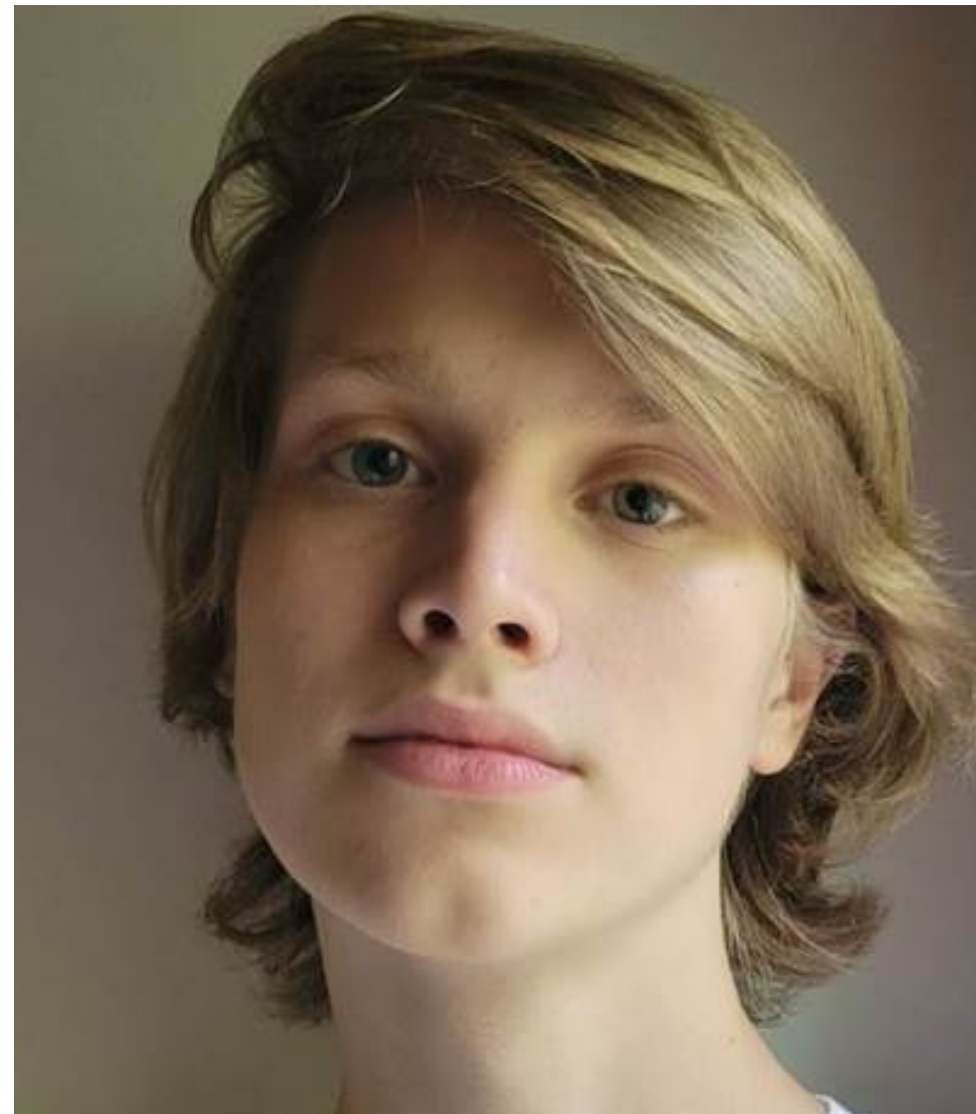


**2023 ALWORTH RECIPIENT**

"This research project boosted confidence in my knowledge of exercise science and my ability to apply it to real-world towards the development of fitness regimens for a variety of sports and fitness programs."



# EARL MUECKE



**2023 ALWORTH RECIPIENT**

High School: Harbor City International School

College: University of Minnesota, Duluth

Major Field: Mathematics and Computational Physics

## **RESEARCH:**

- Modeling the effectiveness of using two cancer drugs at the same time in treating pancreatic and prostate cancer in order to reverse immunity. Patients build resistance to Docetaxel and ZZW-115. .

# JULIA GORALSKY



**2021 ALWORTH RECIPIENT**

High School: Brainerd

College: Columbia University

Major Field: Biochemistry

## RESEARCH:

- Institute for Cancer Genetics: Study of telomere biology
- Independent Research: The role of topoisomerase in the ALT mechanism used by select cancers
- Writes for Columbia Science Review and edits the Journal of Global Health

- Perinatal RISE lab: Study biochemical basis for the transmission of the effects of adverse childhood experiences between mother and child
- Multiple Sclerosis Center: Clinical research coordinator at the Journal of Young Investigators: Editor-in Chief

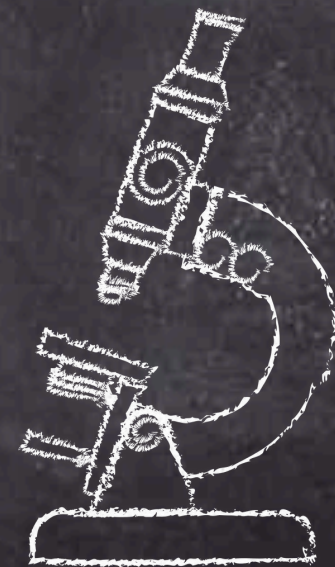


# LINDSAY STEINBRECHER



**2021 ALWORTH RECIPIENT**

"This summer, I plan to take the MCAT and apply to medical school. Then, in my senior year, I will be finishing my biochemistry coursework with courses such as physical chemistry and molecular biology. Inspired by my studies at Oxford, I also plan to complete a course in immunology."

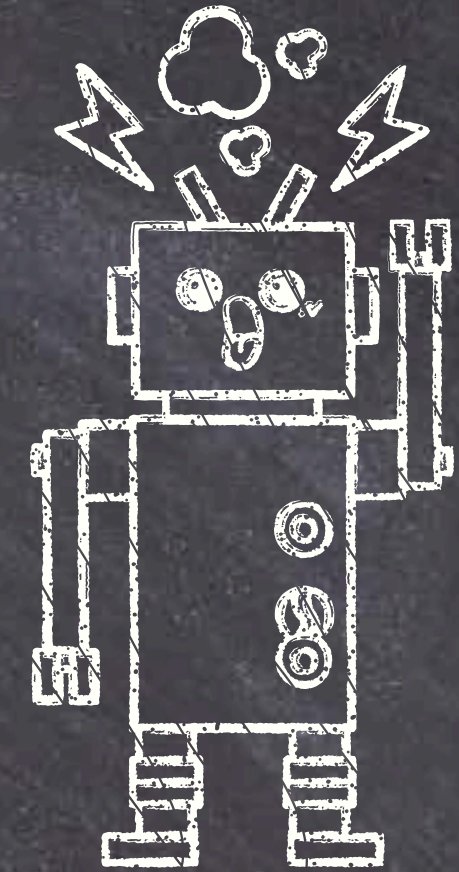


# HOLDEN SUTHERLAND



**2021 ALWORTH RECIPIENT**

High School: International Falls  
College: Michigan Tech  
Major Field: Robotics Engineering



## **RESEARCH:**

- Robotics Systems Enterprise Team goal is to design a solution for a fully autonomous vehicle that would improve its accessibility and improve the autonomous vehicle industry.
- Project to be presented at the SAE World Congress, a global automotive technical conference and exhibition.



# ELIJAH KRAMER



**2022 ALWORTH RECIPIENT**

High School: Duluth East

College: University of Utah

Major Field: Mechanical Engineering

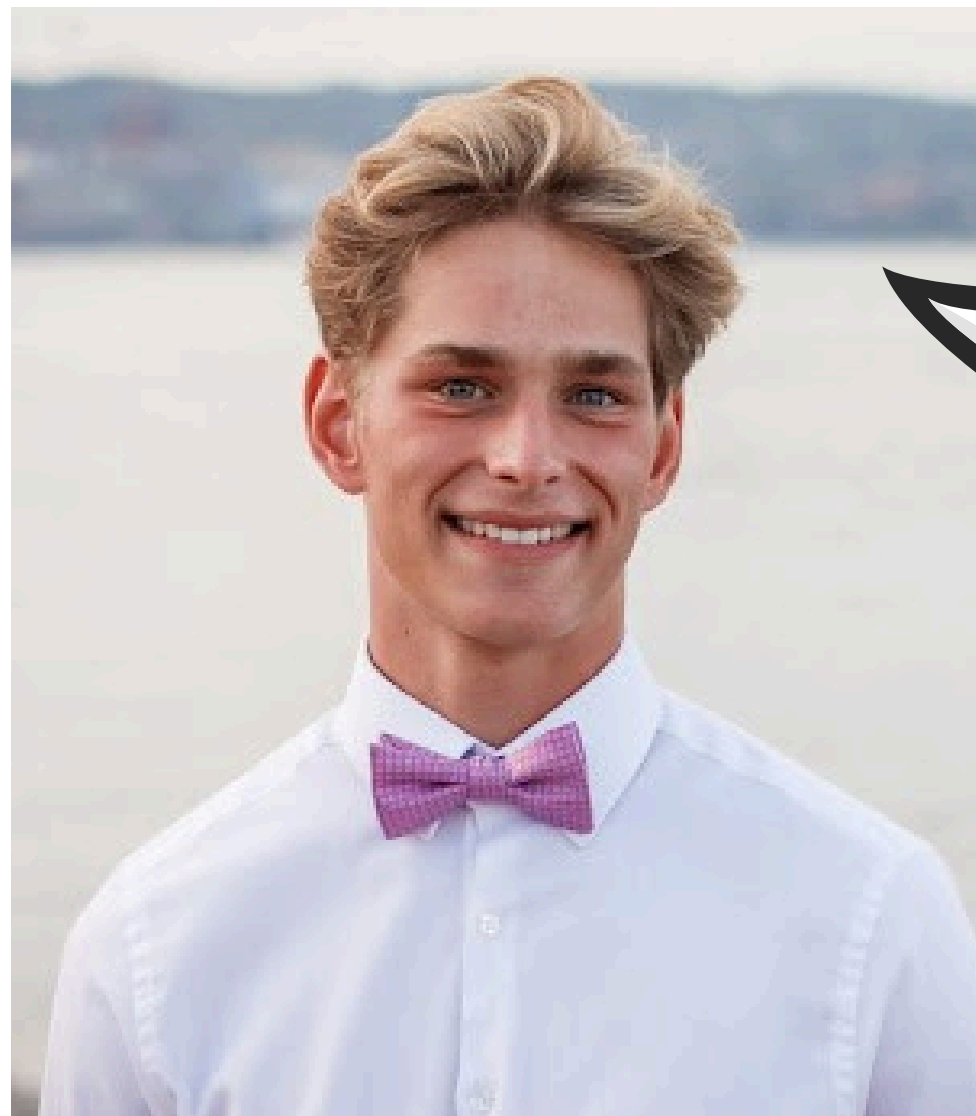


## **RESEARCH:**

- Developed a prototype of a proximity device for blind swimmers to autonomously know where they are in the lane and when to flip.
- Developed a prototype of weight sensing insoles for physical therapists to use when rehabilitating fractures to better calibrate weight bearing over loads to aid in faster healing.

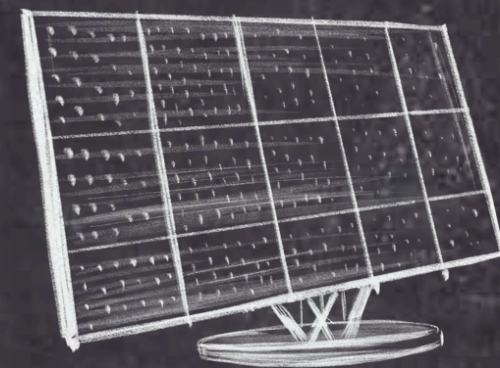
(Incremental overloads helps in healing broken bones)

# ELIJAH KRAMER



**2022 ALWORTH RECIPIENT**

"Currently, I work in a shop renovating vans into livable homes with solar energy systems. I love hands-on building projects and helping people live better lives."



# KYLA ROSMAN



**2023 ALWORTH RECIPIENT**

High School: Marshall School

College: University of Minnesota, Twin Cities

Major Field: Biology

## RESEARCH:

- Looking at the impact of pesticides (acephate specifically) on zebrafish development and wound healing response to be used as a model organism for humans.
- Looking at the impact of pesticides as environmental pollutants that are generally becoming more common and present in the environment.

# SYLVIA BERKA



**2021 ALWORTH RECIPIENT**

High School: Cook County

College: University of Minnesota, Twin Cities

Major Field: Aerospace Engineering



## RESEARCH:

- Thomas Murphy Engines Laboratory on campus, working on a project that involves trying to get a 6-cylinder Diesel engine to run on gaseous ammonia
- Member of the Formula SAE racing team making two race cars, one combustion and one electric. The team voted to combine the Engine sub-team with the High-Voltage Powertrain sub-team to create just a Powertrain.

# SYLVIA BERKA



2021 ALWORTH RECIPIENT

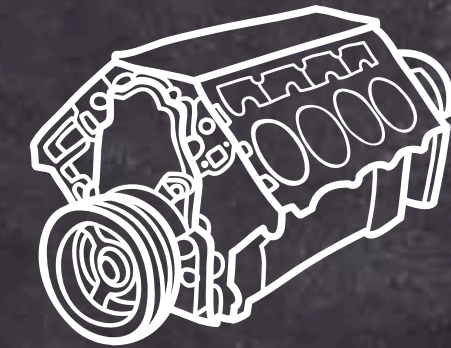
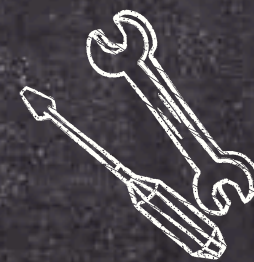


# SYLVIA BERKA



**2021 ALWORTH RECIPIENT**

"Through my research, I have learned quite a bit about the future of combustion engines and alternative fuels. This past summer, I landed an internship at a start-up company that makes pyrolysis burners."



# BENJAMIN WILSON



**2021 ALWORTH RECIPIENT**

High School: Rock Ridge

College: Arizona State University

Major Field: Biomedical Engineering

## **RESEARCH:**

- Developed a small, easy to replace filter for urinary catheters, for clearing blockages and eliminating having to replace the entire bag.
- Conducting research at Mayo Clinic in Arizona

# STELLA WHEELER



**2023 ALWORTH RECIPIENT**

High School: Marshall School

College: St. Olaf University

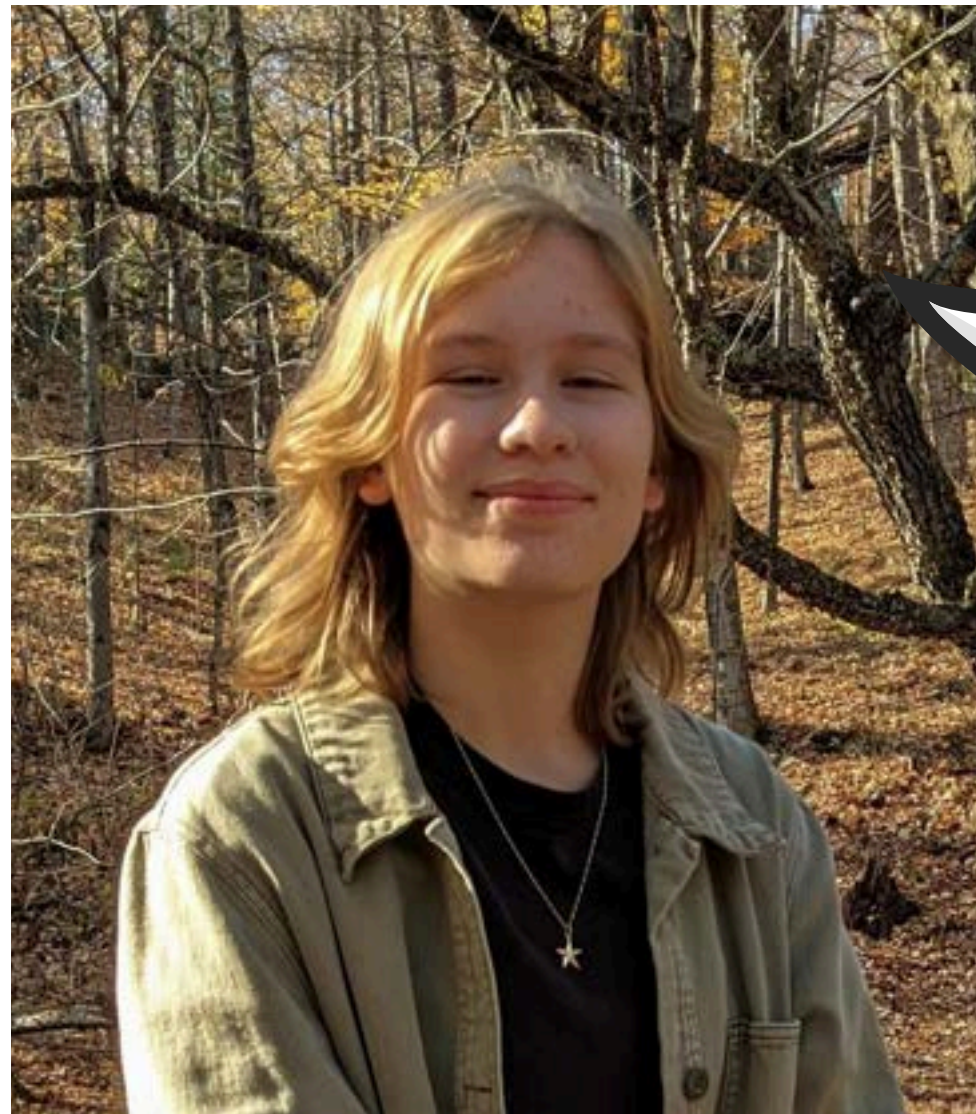
Major Field: Environmental Studies/Biology

## **RESEARCH:**

- Studying the mechanisms of coral skeleton growth and hands-on experience caring for coral
- Ask the question: do coral skeletons trap pockets of seawater as they grow? If so, where are these pockets located in the coral skeleton and what implications do they have for the material properties (e.g. hardness) of coral reefs?

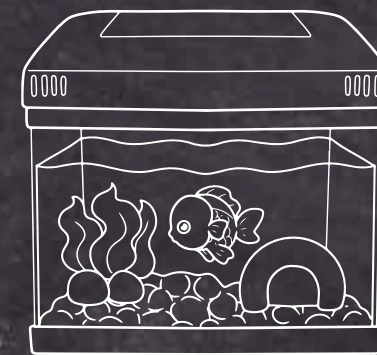
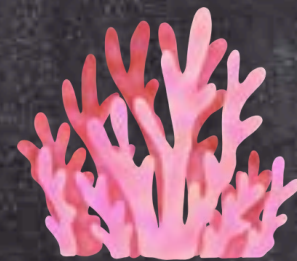


# STELLA WHEELER



**2023 ALWORTH RECIPIENT**

"Our questions will be motivated by a concern for environmental issues like climate change, but will involve a lot of materials science approaches. I am excited by the opportunity to do hands on research and thrilled that my professor trusts me with the handling of the live organisms."



# ERIC LAKE



**2008 ALWORTH RECIPIENT**

High School: McGregor

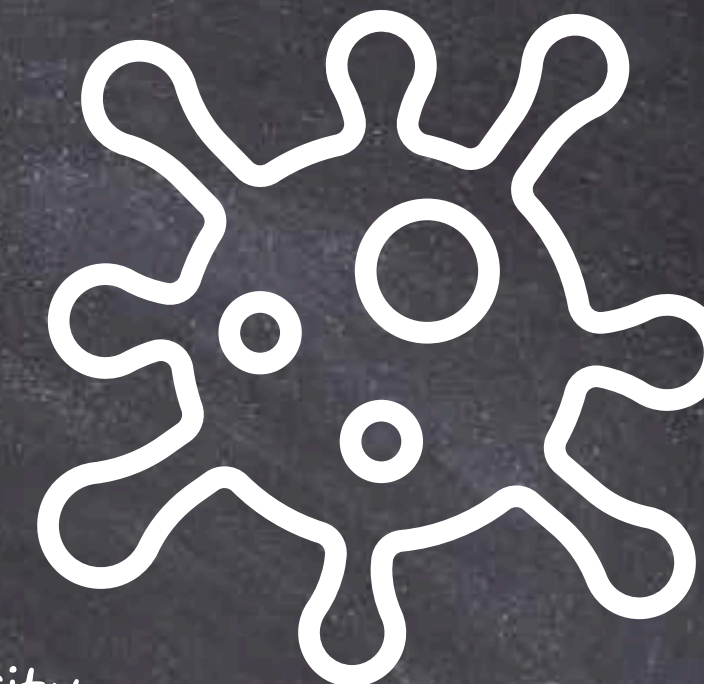
College: Undergrad St. Scholastica, PhD University of MN Twin Cities

Major Field: Pharmacology: Develop drugs tailored to a specific person.

## RESEARCH:

- Post-doc University of Wisconsin, Madison: where he led the production and purification of proteins and antibodies derived from the immune system of sharks, and how shark derived antibodies could be used to target COVID - a unique and promising source of nanobody scaffolds.

# JOE MATTSON



**2009 ALWORTH RECIPIENT**

High School: Duluth Central

College: UMD BS & PhD from Cornell University

Major Field: Chemical Engineering

## **RESEARCH:**

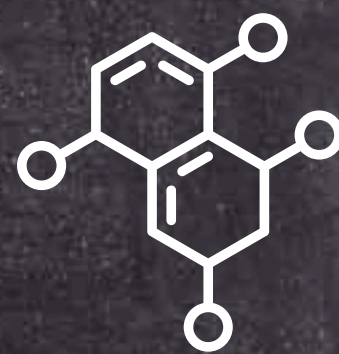
- Making of the vials for the COVID vaccine and the proprietary polymer coating that protects them as they bump into each other at high speeds on the production line.
- Created a new way to treat and process the glass that was better for vaccine protection purposes.
- He tested paint and coatings that have been shown to kill more than 99.9% of SARS-CoV-2, the virus that causes COVID-19.

# JOE MATTSON



**2009 ALWORTH RECIPIENT**

"We need to make sure what works on a small scale works at the mass production level, because things happen differently at each level. Ultimately, the physics don't change but the way we can leverage them does."





THANK YOU!