



2023

IMPACT REPORT

COORSTEK DENVER METRO REGIONAL
SCIENCE AND ENGINEERING FAIR

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COORSTEK

DMRSEF DENVER
METRO
REGIONAL
SCIENCE AND
ENGINEERING
FAIR 

WELCOME

We are thrilled to present the **2023 Denver Metro Regional Science and Engineering Fair (DMRSEF) Impact Report**. As we celebrate the end of our 60th season, we extend heartfelt gratitude to our community of students, volunteers, sponsors, and supporters.

Since 1963, the fair's mission has been to **empower young minds and kindle curiosity**. This year was no exception as we were wowed with exceptional projects that embodied a spirit of innovation and collaboration. Students delved into diverse fields, from climate science to healthcare, aerospace to psychology, and more. The creativity and passion displayed by these students left us inspired and hopeful for the future.

Throughout the fair weekend, we encouraged students to consider how far the world has come in the last six decades. 1963 was the year Martin Luther King Jr. delivered his "I Have a Dream" speech. It was the year the first liver transplant was performed and the first functioning laser was demonstrated. It was 6 years before the moon landing, but it was the year that the first woman entered space. Neuroscientists were just starting to understand how the brain works, and it was the year that the word "clone" was first introduced into the lexicon of biomedicine. Computers were still the size of large appliances and Bell Laboratories had just introduced the first push-button telephone. We were still living in a largely analog world.

Since then, we've witnessed groundbreaking discoveries in the fields of genetics, biotechnology, AI, and quantum computing, exponentially expanding human knowledge and leading to today's world of digital abundance. Walking around with computers in our pockets, it's easy to take for granted the limitless access to information and new ideas, but every advance that our society has experienced started with the spark of an idea in someone's mind and **we look forward to seeing where the sparks in our students' minds lead us over the next 60 years.**

At the DMRSEF we are excited to do our small part in fanning these sparks, working with our community partners to cultivate an environment where young minds feel supported and encouraged to explore, learn, and create. As we move forward, we're committed to adapting to the evolving scientific landscape, preparing students for the future, and ensuring science education reaches all. **We believe that within each participant lies the potential to ignite the next great scientific breakthrough.**

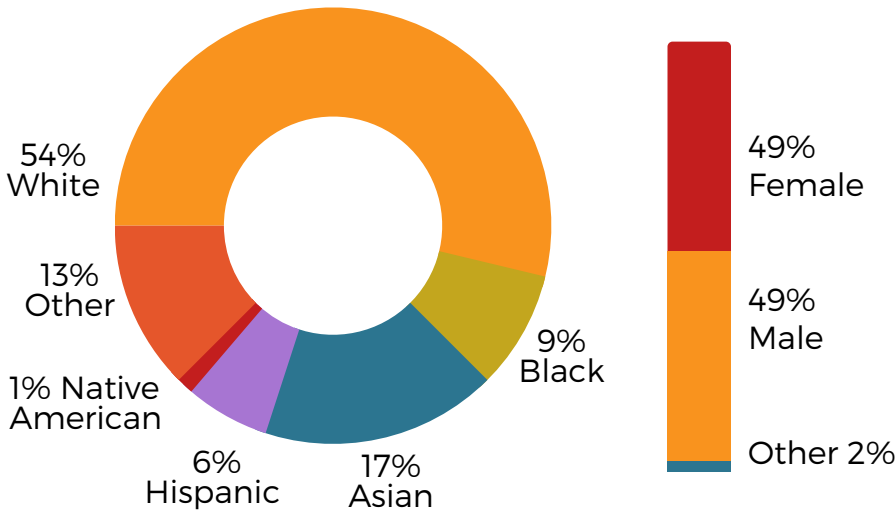
Thank you for your support and continued partnership. Onward together!

-The DMRSEF Team

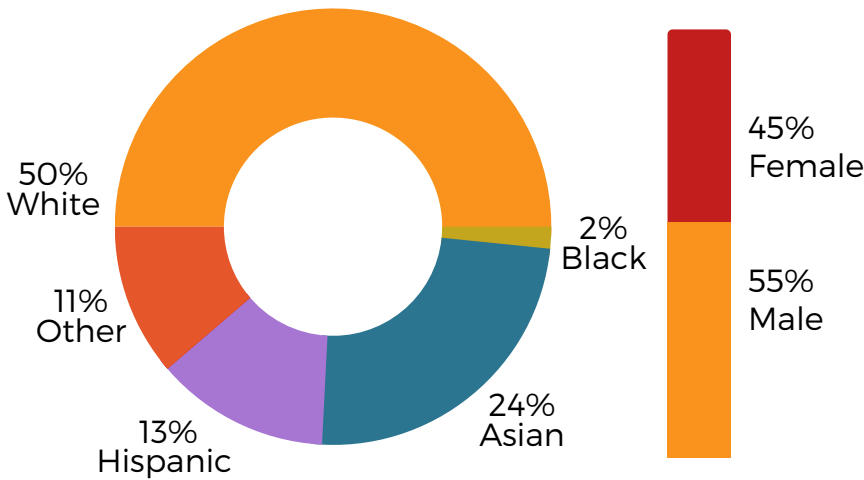
Erin Golden, PhD | Kayla Ahr | Samantha Sands

PARTICIPATION

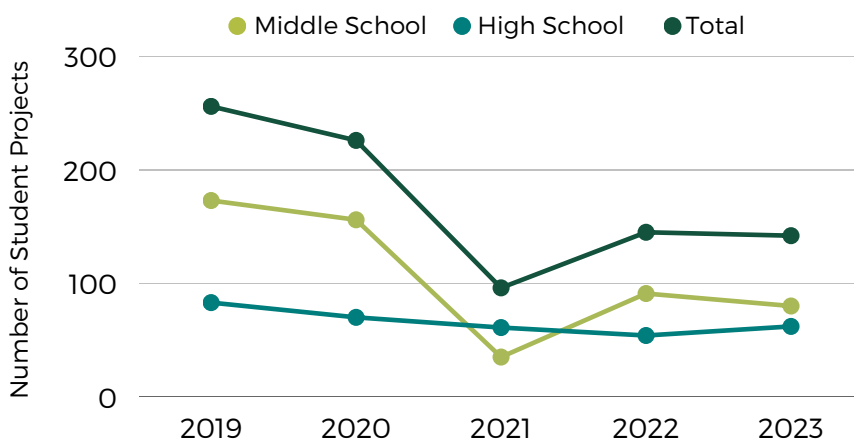
MIDDLE SCHOOL



HIGH SCHOOL



5-YEAR PARTICIPATION



142

students participated in the 2023 Denver Metro Regional Science & Engineering Fair

140

awards and prizes recognized student achievement in their category, overall fair performance, and special skills.

15

preseason events helped students get science fair ready.

3200

contact hours between DMRSEF staff and students

224

science fair judges and volunteers gave their energy and time to make the season a success!

PRESEASON EVENTS

SEASON KICKOFF

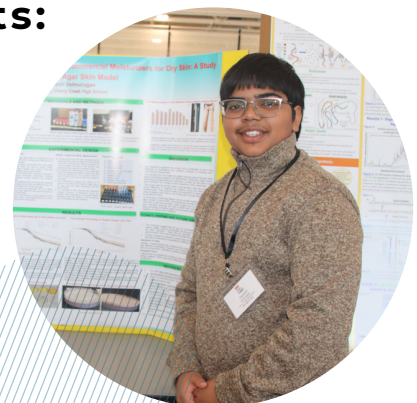
On Saturday, September 24th, 2022 we officially kicked off the 2022-2023 DMRSEF season! Nearly 90 students, parents, and teachers joined us at CU Denver to learn about plans for the 60th annual fair and our season-long programs. Highlights included a **Project Mindstorm** session led by our **Student Advisory Council**, where students mixed and matched categories and topics to come up with innovative project ideas, as well as a special visit from **Project Bridge**, a science communication group based at CU Anschutz, who demonstrated their best science communication skills while teaching attendees about their biomedical research projects. The day wrapped up with our first-ever **“Speed-Mentoring”** session, which allowed students to rotate through tables of potential project mentors from nearly a dozen STEM industries. More than 40 community volunteers showed up to help. The entire day was a celebration of young scientists and their brilliant ideas!

STUDENT GRANTS

We were pleased to offer a second year of student mini-grants for the 2022-23 fair season. **This program was created to alleviate the cost of participation in the DMRSEF**, allowing middle and high school scientists to apply for research funding. Applicants submitted a brief proposal and interviewed with members of the DMRSEF team and graduate students from Project Bridge. We heard from an impressive group of scientists and thoroughly enjoyed their “Shark Tank”-style project pitches. This year's applicants represented a range of disciplines, with projects including the assessment of water quality and lead filtration systems in Denver, the design of a machine to extract carbon dioxide from the air, and a mechanism that would allow bicyclists to harness the energy generated on their rides. **We awarded eight grants of \$100 each**, double the amount of grants awarded in this program's inaugural year.

Congratulations to this year's grant recipients:

Ishan Kalluri (American Academy)
Kai Pollard (SkyView Academy)
Varun Velmurugan (Campus Middle School),
Anesh Ilango (William Bill Roberts K-8)
Logan Marion (Evergreen High School)
Paree Sharma (St. Mary's Academy)
Elsa Vossler (Denver School of the Arts)
Vignesh Velmurugan (Cherry Creek High School)



COMPETITION READY SERIES

The DMRSEF is more than an annual competition, it's a **season-long program** that supports students through the entire research process. From the first spark of an idea through a fully developed scientific presentation, **our Competition Ready Series helps students get from start to science fair.**

SCICOMM WORKSHOPS

Nearly 100 attendees joined DMRSEF staff for tips and tricks surrounding each step of the science fair process. We hosted 5 workshops covering everything from data analysis to poster preparation and interview techniques. Students were encouraged to interact with workshop hosts and one another to take their research from an idea to a finished product. The series culminated with 2-days of practice interviews, during which students met with a team of mock judges that included past DMRSEF judges, CU Denver students, and other community volunteers.

SCIENCE FAIR Q&A

DMRSEF staff were joined by members of the Student Advisory Council to host 7 Science Fair Q&A sessions. During these open office hours science fair pros helped participants navigate each step of the competition. From paperwork and forms through presentations and interviews, students received individualized feedback to help them succeed!

CSEF & ISEF PREPRATION

The DMRSEF season does not end with our fair! Throughout March, April, and May the team worked closely with our 38 CSEF finalists and 4 ISEF finalists as they prepared for the next stages of their research journey. In Q&A sessions, practice interviews, and one-on-one meetings our finalists received feedback to ensure their projects were ready to shine at every level of competition.



THE 2023 DMRSEF

The **60th annual Denver Metro Regional Science and Engineering Fair** took place at the **University of Colorado Denver** on **Friday, February 24th**. What a joy it was for the competition to be back in person for the first since 2020!

At this year's fair, **142 student participants** shared their research with over **200 judges and volunteers**. Students presented new innovations to combat climate change, observations on the way we interact with the world around us, and solutions to real-world problems in medicine, space, and everything in between. When they weren't in judging, students rotated through various activities including **engineering design challenges**, **Auraria campus historical tours**, and a **brain-break "chill" space** where students could network with one another, play games, and partake in **hands-on activities** with our title sponsor **CoorsTek**. Students also participated in **'Speak with a Scientist'** panels, where they learned about careers across a variety of STEM disciplines and fields.

MY FAVORITE PART OF THE SCIENCE FAIR WAS...

"...meeting new people, seeing new projects, and presenting my research. It was really fun to show off what I had done and to see what others had done too."

"... seeing all of the amazing projects."

"... the activity rotations were fun, engaging, and insightful for all. "

"... talking to the judges. They asked great questions and talking to them gave me new ideas."



[VISIT THE 2023 VIRTUAL PROJECT SHOWCASE HERE](#)

COMMUNITY DAY

Saturday, February 25th we hosted our first-ever Community Day Open House and STEAM Activities Fair. Students had the opportunity to share their research with their friends, family, and the public while participating in hands-on experiments and demonstrations. The activities were a blast and included an original ENIGMA machine brought by the **National Security Agency Colorado**; plasticized human brains from **CU Anschutz**; fossils from **Dinosaur Ridge**; student-hosted tables from **CU Denver's departments of Anthropology, Mathematics, and Biology**; the science of ceramics with **CoorTek**; and live drone soccer tournaments with **US Drone Soccer**; among many others. Thank you to our community partners for making the day a success!



AWARDS CEREMONY

Saturday night we celebrated **#60YearsOfScience** by awarding 140 category and special awards! Approximately 70 students were recognized in total. It was a fantastic end to a phenomenal weekend and a wonderful way to reconnect with the community after two years of virtual events!



BEST IN FAIR WINNERS

SENIOR - BEST IN FAIR

1st Place: Aditi Avinash - Rock Canyon High School

Model Validation and Preclinical Testing of Digestive Enzymes for Gluten Breakdown

2nd Place: Vignesh Velmurugan - Cherry Creek High School

Evaluating the Performance of Natural and Commercial Moisturizers for Dry Skin

3rd Place: Evelyn Seevers - Conifer High School

Analyzing Data of Data Analysis of Analyzed Data about Exoplanets

1st Alternate: Rhys Hanson - Conifer High School

The View From Above

2nd Alternate: Kimball Boyle - Evergreen High School

Soccer Cleat Design: Ankle Injury Prevention

JUNIOR - BEST IN FAIR

1st Place: Grace Marmorstein - Challenge School

The Insect Repellent Properties of Nepetalactone

2nd Place: Emma Beeby - Skinner Middle School

The Affect of Stress on the Amount of Carbon Dioxide Exhaled

3rd Place: Jocelyn Kramer - Good Shepherd Catholic School

The Exodus of Ca+: Can Container Material Reduce Calcium Content in Milk

Honorable Mention: Varun Velmurugan - Campus Middle School

Risk assesment of fluoride contamination in water: a study using brine shrimp model

BEYOND DMRSEF: CSEF

DMRSEF was thrilled to nominate 38 students to compete at the 2023 Colorado Science and Engineering Fair (CSEF). Held on April 13-15, 2023 at Colorado State University Fort Collins. Our students rocked the event, winning 2 Best in Fair Awards, 23 Category Awards, 49 Special Awards, and 1 Scholarship!



ISEF FINALISTS



ADITI AVINASH
ROCK CANYON HIGH SCHOOL

Model Validation and Preclinical Testing of Digestive Enzymes for Gluten Breakdown:
A move to cure Gluten Intolerance and Celiac Disease



ERSEL SERAR
CHERRY CREEK HIGH SCHOOL

Designing a More Efficient Altitude Compensating Rocket Nozzle



EVELYN SEEVERS
CONIFER HIGH SCHOOL

Analyzing Data of Data Analysis of Analyzed Data about Exoplanets: Analyzing Student Learning Patterns



VIGNESH VELMURUGAN
CHERRY CREEK HIGH SCHOOL

Evaluating the Performance of Natural and Commercial Moisturizers for Dry Skin: A Study Using Agar Agar Skin Model

BEYOND DMRSEF: ISEF



May 14th-19th 2023, four brilliant Denver scientists joined the DMRSEF Team in Dallas, TX at the largest pre-collegiate science competition in the world - the **Regeneron International Science and Engineering Fair**. ISEF brought together 1600 students from 49 states and 64 countries to share their science on the world stage. The week was more than a competition for our finalists, though. From new experiences to forever friends, and inside jokes to ice cream parties - 2023 ISEF was an unforgettable experience for both our students and our team.

We would like to recognize our finalists- Aditi Avinash, Ersel Serdar, Evelyn Seevers, and Vignesh Velmurugan- as well as their families who not only made this week possible but the best adventure we could have imagined.

"Going to ISEF was one of the most transformative experiences I have ever had. This was one of the only times I've ever been surrounded by other kids my age who have such a profound interest in STEM and learning. There is something unique and special about learning something new from your peers."

-Aditi Avinash

"The experience wasn't just exciting and informational, it was inspirational to see a room of my future colleagues and friends"

-Evelyn Seevers

"My favorite part of ISEF was definitely the excitement I felt seeing the projects done with innovative thinking."

-Vignesh Velmurugan

"It was an incredible experience, and I'll cherish the memories and friendships I made forever."

-Ersel Serdar



REGENERON
ISEF
A PROGRAM OF
SOCIETY FOR SCIENCE
DALLAS | 2023

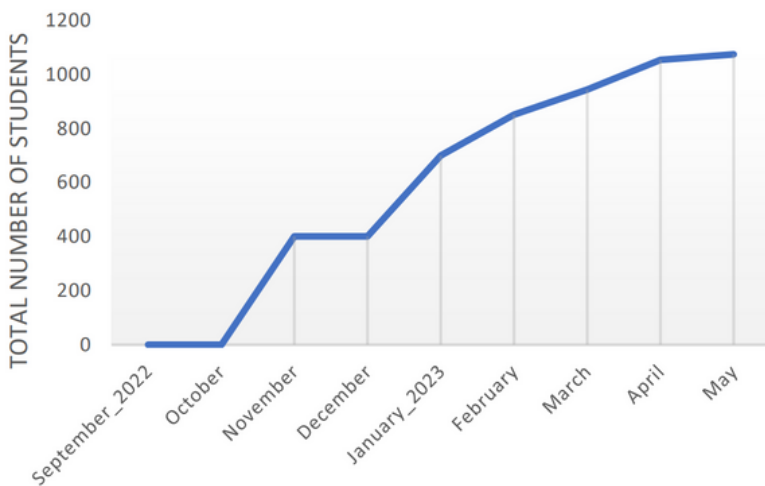
OUTREACH COMMITTEE



Josepha's Kapamilya for Outreach and Advancement (J-KOA) in STEAM, an outreach branch of DMRSEF, was founded in September of 2022 by graduate students and staff from CU Anschutz Medical Campus. Their goal is to get the word out about the fair in the hopes of encouraging more students—especially those from underrepresented backgrounds and rural communities—to compete. J-KOA volunteers are professional scientists, and non-scientists alike—many of whom come from underrepresented backgrounds themselves. During events, volunteers tell their own STEAM stories and lead hands-on science demos with students.

"We tell our stories with the theme that every student is capable of doing science if they want to regardless of who tells them that they can't."
-Koya Conradson, J-KOA President

Total Number of Students Reached



COMMUNITY IMPACT

Approx. 1,100 students reached across 10 schools and libraries.

39% of students polled expressed an interest in competing in the 2024 DMRSEF.



STUDENT ADVISORY COUNCIL

"The Student Advisory Council (SAC) is a group of passionate students dedicated to the Denver Metro Regional Science and Engineering Fair. We meet monthly with the DMRSEF directors, acting as the bridge between students and the fair. Our goal is to ensure all students can participate in the fair and aim to make resources equitable and accessible to students across the Denver Metro area. During the 2022-2023 season, we volunteered to help run events such as the Season Kick-Off event and Science Fair Q&A sessions. The SAC brainstorms new ideas for how to make the fair more productive and fun, honing in on important skills such as teamwork, collaboration, and critical thinking." - Aditi Avinash & Siena Negron



CEDAR W



ADITI A



RHYS H



AYAN V



SIENA N



SASANK V



ELSA V



TYLER B



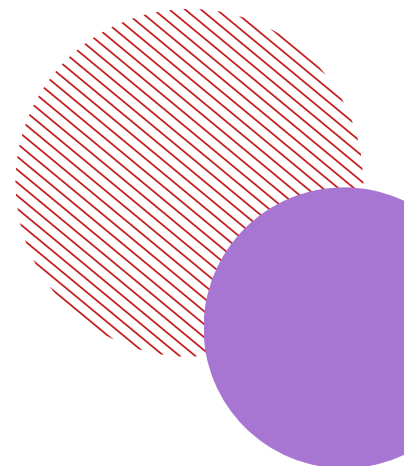
SAMUEL L



AANSHI S



TOSHIRO N



COMMUNITY ADVISORY COUNCIL

The DMRSEF Community Advisory Council brings together fair alumni, parents, teachers, community organizations, and partners to strengthen our commitment to diversifying the DMRSEF community and bringing new voices to the table as we map out the future of our fair. Community Advisory Council meetings are held quarterly and provide a source of inspiration as council members envision new avenues to expand the reach of the fair. We are thankful to our advisory council members for their commitment to empowering student scientists. **Thank you to the following individuals who served on the 2022-2023 council:**

Michael Blueglass
Courtney Buttler
Ashley Clutter
Anna Crawford
Mike Ferrara
Mindy Hansen
David Hook

Pam Jansma
John Jenkins
Kaitlin LaFlamme
Randel Mercer
Kevin Nugent
Jennifer Piche
Bharathi Rao

Robert Sanchez
Meredith Tennis
Lori Twehues
Loryann Varela
Ron Vasquez
Heather Waldron

OPERATING COMMITTEE

The science fair would not be possible without the support of our amazing Operating Committee. This team of volunteers shares their time, expertise, and skills each year to make the fair a reality. Our Operating Committee meets monthly from September to May. They help to organize the fair schedule, lead the Scientific Review Committee, support outreach events, advertise the fair, and ensure the fair is both fun and logistically feasible. The DMRSEF team is incredibly grateful for the dedication of the Operating Committee. **Thank you to the following individuals who served on this year's committee:**

Koya Conradson
Tricia Ahr
Pamela Nagafuji
Courtney Wilson

Hannah Moran
Courtney Butler
Zach Richards
Ashley Clutter

Brian Jackson
Jesse Hinckley
Kristen Salsbury
Eleanore Lewis



LOOKING FORWARD

Looking ahead, we are excited about the future of the DMRSEF and the continued growth of our community. We remain committed to nurturing a love for discovery and providing opportunities for young minds to flourish. Together, let us inspire the next generation of scientists and engineers, and shape a future that embraces innovation, inclusion, and collaboration. If you are interested in learning about partnership and volunteer opportunities please contact us at DenverScienceFair@ucdenver.edu

THE DMRSEF TEAM



**ERIN
GOLDEN**

Director



**KAYLA
AHR**

Associate Director



**SAMANTHA
SANDS**

Outreach & Engagement
Director

**SAVE THE DATE FOR THE
61ST ANNUAL DMRSEF:
FEBRUARY 23RD, 2024**

THANK YOU TO OUR VOLUNTERS AND JUDGES

AANSHI SHAH	CHRISTOPHER GREEN	JAMIE NIESZ	LORRAINE DAVIS	RYAN PYFROM
ADITI AVINASH	CHRISTOPHER NAUGHTON	JARED GRAHAM	LORY-ANN VARELA	SABRINA BALL-AMES
ALAN STEPNESKI	COLLEEN CAMPBELL	JASON AIN	LUCY RIVELLO	SALIM LAKHANI
ALEXANDER PISKIN	COURTNEY BUTLER	JAVIER PASTORINO	LYDIA MEYER	SAMMIE EICHEL
ALICE LIN	COURTNEY WILSON	JAYME GOODRUM	MADDISON AHR	SAMUEL LAW
ALICIA ROYBAL	CYDNEY HUGHES	JEFFREY NAGAFUJI	MANASI VYAS	SASANK VEPA
ALISON XIAOQIAO XIE	DANA COE	JENNIFER BACON	MARISSA RODRIGUEZ	SASHA SOSNIAK
ALLISON BOURKE	DANIEL BRACK	JENNIFER PICHE	MARK CICCAGLIONE	SAVANNA STOY
ALLY POLAND	DANIEL GUERRANT	JENNY UYEN NGUYEN	MARTHA MCKEON	SAVANNAH ENRIQUEZ
ALYA SHARBAUGH	DARCY FLORA	JESSE HINCKLEY	MAXWELL MCCABE	SCOTT MCINTYRE
ALYSON BOTOS	DAVID HOOK	JOANNE RODDEN	MAYA HUNTER	SHARALL WITHANAGE
ALYSSA CRUZ	DAVID MERRIAM	JOHN JENKINS	MAYRA SMITH-CORONADO	SHELLY MCCAIN
AMANDA LAM	DAVID MORTON	JORDAN BREWER	MEG HAND	SHUBHAM KRISHAN
AMY MORRISSEY	DAVID PLATT	JOSHUA KEITH	MENGLI ZHANG	SIENA NEGRON
ANALUISA LARSON	DON KUETTEL	JOYCE MCCOLLAM	MEREDITH TENNIS	SONAM SHERPA
ANDREW JANECEK-OILER	DONNY ROUSH	JULIA PAEZ	MIA HARRIS	SONIA VALENCIA
ANDREW LAROCHE	DOUG WIEMER	KAITLIN ALEMANY	MICHAEL COWAN	SOYON BUENO
ANGEL RUIZ	ED AHR	KAITLIN LAFLAMME	MICHELLE KENT	SRIDEVI ILANGO
ANGELO GALLEGOS	EDWARD KLEIN	KAREN HAYS	MICHELLE NOLEN	STACY UYEDA
ANISSA YIP	ELAINE MASKUS	KAREN RAMOS	MIKE FERRARA	STEPHANIE SEEVERS
ANNA CRAWFORD	ELAN MARKOV	KARLI SWENSON	MIKE KAWAI	STEVEO STEPHENS
ANTON KUCERA	ELEANORE LEWIS	KARLIN RUFENACHT	MINDY HANSEN	SUDIPTA PANJA
ARWEN DE LA TORRE	ELIZABETH RIBBLE	KATHRYN HAMILTON	MORIAH MILES	SUSAN SCHELBLE
ASHLEY CLUTTER	ELSA VOSSLER	KATIE BIDNE	MUHAMMAD HUSSAIN	TAYLOR CLARKSON
ASHLEY PHILBECK	ELYSE BLAZOSKY	KEWALIN SAMART	NICHOLAS AHEARN	TIMOTHY HAAS
AYAN VAISHNAV	EMILIE WAGGONER	KIMBERLY Bjugstad	NICK BATTERMAN	TOM MILLIGAN
BALU RANGASWAMY	EMILY FARRER	KIRSTEN PERRY	NICO COSCA	TOSHIRO NAGAFUJI
BEN NATHAN	EMILY VOLK	KOYA CONRADSON	NICOLE BROWN	TRENT HAWKINS
BENNETT PARKER	EMMY PETERSON	KRISTIN SALSBUURY	NICOLE MUKOOBA	TRICIA AHR
BETZAIDA MALDONADO	ERNEST KOLESNIKOV	KRISTINA DEHERRERA	OMAR GARCIA	TSENAAT HADGU
BHARATHI RAO	EVAN SHAPIRO	KYLE WARNER	PADMA AVINASH	TUSHAR KUSHIK
BILL WEMMERT	GABRIELE THOMPSON	KYREN BOGOLUB	PAM JANSMA	TYLER BURT
BRIAN JACKSON	GINNY QUANEY	LAILA ZEID	PAM NAGAFUJI	VAIBHAV UPADHYAY
BRIAN BROWN	GLENDIA SCHUMANN	LAKSHMI DIVYA KOLORA	PARKER NAGAFUJI	VARUNAVI BATTULA
BRIAN HOSTETLER	GRACIELA FISCHER	LAREINA ALVAREZ	PATRICIA LAMMINAR	WHITNEY ROBERTS
BRICE DYER	GREG COCKS	LAURAE LUEVANO	RACHAEL KOSTELECKY	YAMILET MENDOZA
BRIDGET VILLEGAS	GUADALUPE SANCHEZ	LAUREN HABENICHT	RANDEL MERCER	YVONNE KUMAH
BROOKELYNN STILLWELL	HANNAH JONES	LAUREN HART	RASEEL ZMILY	ZACH GOARD
CARRIE BLACK	HANNAH MORAN	LAURIE LYON	RHONDA CURTIS	ZACHARY RICHARDS
CASEY DAVENHILL	HANNAH STERNHAGEN	LEE BISHOP	RHYS HANSON	ZARINA NUSRIDDINOVA
CASSIE KEMMLER	HARRISON WELLS	LEIGH ALLEN	ROBERT JOLLY	ZHENGXIONG LI
CAYCE BRANHAM	HEATHER WALDRON	LIBBET FINSETH	ROBERT SANCHEZ	
CEDAR WINE	HERAN RUSSOM	LIZ EVANS	RON VASQUEZ	
CELINE MIRA	IAN RIDLEY	LOGAN RUTHARDT	RYAN GEE	
CHLOE COLLIGAN	JACOB TORRENS	LORI TWEHUES	RYAN ADLER	
CHLOE TAN				

THANK YOU TO OUR COMMUNITY PARTNERS



COORSTeK



College of Liberal Arts and Sciences
UNIVERSITY OF COLORADO DENVER



RE-LIVE THE 2023 DMRSEF



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2023

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