



DMRSEF DENVER
METRO
REGIONAL
SCIENCE AND
ENGINEERING
FAIR 

2023-2024 DMRSEF Season Kick-Off

Welcome to the 2023-2024 CoorsTek Denver Metro Regional Science and Engineering Fair Season!



Welcome to our Science Fair Community!

THAT'S YOU!

- Students
- Teachers
- Parents
- Mentors
- Volunteers
- Partners

Thank You To Our Partners:



COORSTEK®

9:00 Welcome & Overview of 2024 Fair - 1500

10:00 Project Bridge Gong Show - 1500

10:30 Morning Workshops

- Students- Project Mindstorming - 1600
- Parents & Teachers - How to Support Your Science Fair Student - 1500

12:00 Lunch - 1st Floor Hallway

1:00 Afternoon Workshops - 2500

- Speed Mentoring Event
- Science Fair Help Desk
- Student Advisory Council Table

About DMRSEF

A science fair...

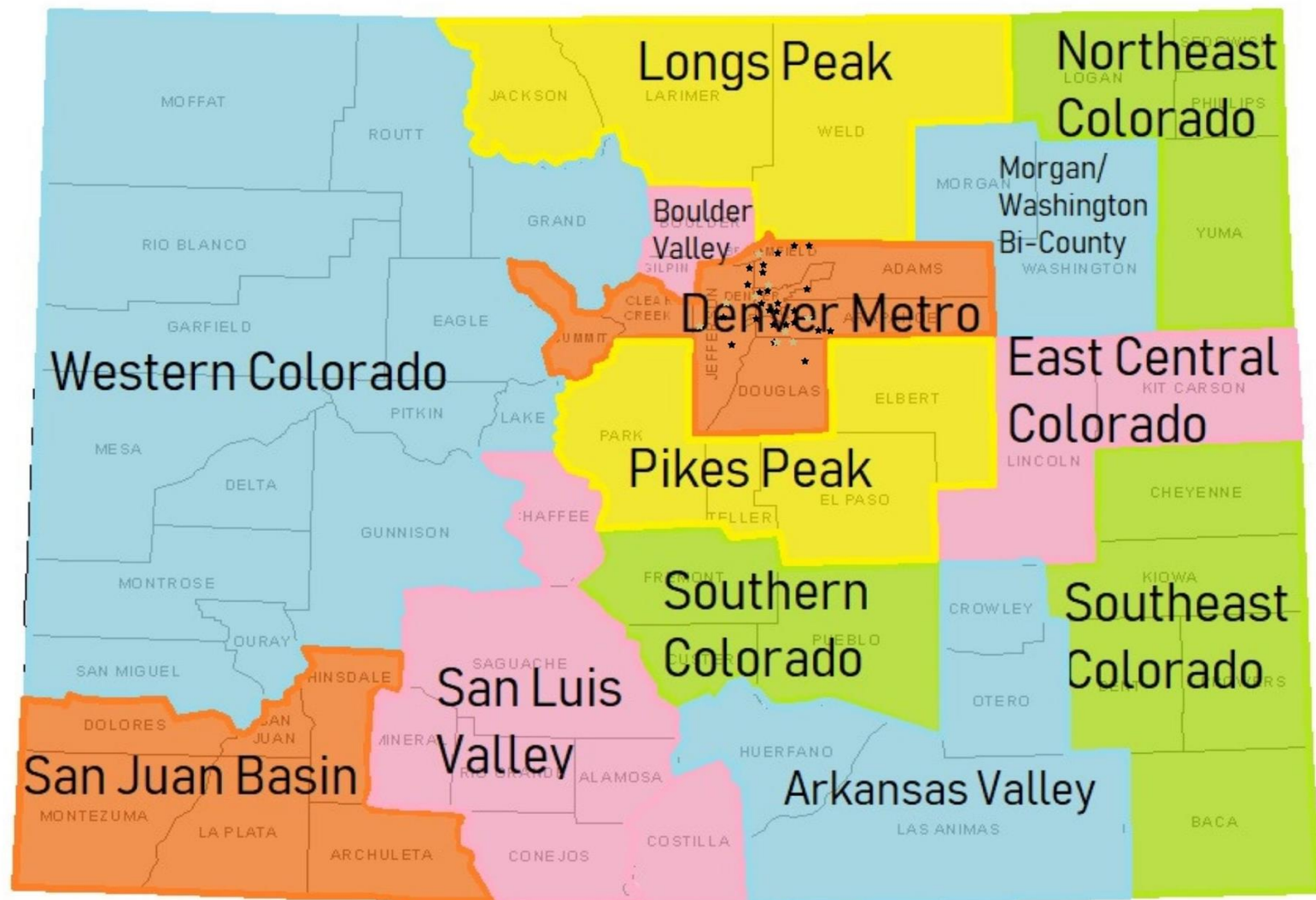
- Is a place for students to **present their science projects** to professional scientists and to the community.
- Encourages **inquisitive students to explore their environment** in a systematic, logical manner
- Is a **science communication** community and experience for students
- Stimulates students' interest in science and technology while simultaneously promoting the development of effective communication, **decision making, evaluation of alternative solutions, and critical thinking**
- An opportunity for students to **network with peers and STEM professionals**
- An opportunity for the best young middle and high school researchers from around the Denver Metro region to share ideas, showcase cutting-edge science projects and **compete for awards and scholarship money**
- A **community** for students to develop their **science identity**



WE WANT
YOU

FOR THE STATE SCIENCE
TECHNOLOGY FAIR OF
IOWA

IOWA STATE UNIVERSITY
Creating a better tomorrow



COORST[®]TEK

D^MRSEF DENVER
METRO
REGIONAL
SCIENCE AND
ENGINEERING
FAIR 



REGENERON

ISEEF

A PROGRAM OF _____
SOCIETY FOR SCIENCE & THE PUBLIC



IMPOSSIBLE DENVER
METRO
REGIONAL
SCIENCE AND
ENGINEERING
FAIR 

2023

2022-2023 Highlights

142

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

3200

contact hours between DMRSEF staff and students

15

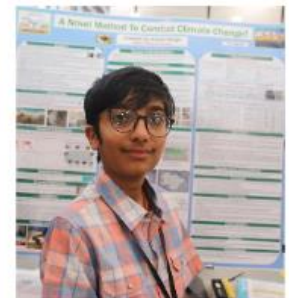
preseason events helped students get science fair ready.

140

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

224

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



This is what a Scientist looks like

2024 DMRSEF

February 23rd 2024

How to Science Fair

FROM START TO SCIENCE FAIR

LEARN MORE AT:

[CLAS.UCDENVER.EDU/DENVERSCIENCEFAIR](https://clas.ucdenver.edu/denversciencefair)

START NOW!
IT'S NEVER
TOO EARLY!

Plan & Prepare

- Identify your research question
- Find out what is already known
- Talk to subject matter experts

SEPTEMBER

Get Involved

- Attend a kickoff event
- Register to participate
- Learn about fair rules and paperwork

Design Your Project

- Finalize your research question
- Plan your experimental procedures
- Obtain necessary pre-approvals

Start Experimenting

- Gather your materials
- Conduct your experiment
- Take thorough notes as you go

JANUARY

Complete Your Project

- Analyze your findings
- Double-check and submit your paperwork
- Reach out to DMRSEF staff with questions

FEBRUARY

Get Fair-Ready

- Revise forms, if required
- Create and submit presentation materials
- Attend *Competition Ready Series* events

CELEBRATE YOUR SCIENCE AT THE
DENVER REGIONAL SCIENCE AND ENGINEERING FAIR!

How To Science Fair

February 23rd

2024 **DMRSEF** COORS TEK
DENVER METRO REGIONAL SCIENCE AND ENGINEERING FAIR



How to Science Fair

Check out our website for detailed step-by-step instructions and all access to all DMRSEF resources

clas.ucdenver.edu/denversciencefair/how-science-fair

... or reach out to denversciencefaire.ucdenver.edu

Step One: Planning and Preparing

- Check out our video on *Getting Started*.
- Decide if you will be working by yourself or as a team (3 people max). Begin to identify your teachers, mentors, parents, and other adults that will be involved.
- Begin narrowing down your interests for a science fair project and start learning more about your topic and field of study.
 - There are resources on the *Students Page* for selecting a topic.
 - Check out the *2023 DMRSEF Showcase* or the *ISEF Project Database* for inspiration.
- Familiarize yourself with the *ISEF Rule Book* before deciding on a project.
- Talk to subject matter experts. Reach out to the DMRSEF team if you need help locating an expert or mentor.
- Apply for a science fair mini-grant to fund your science on the *Student Grants* tab of our website.

Step Three: Designing Your Project

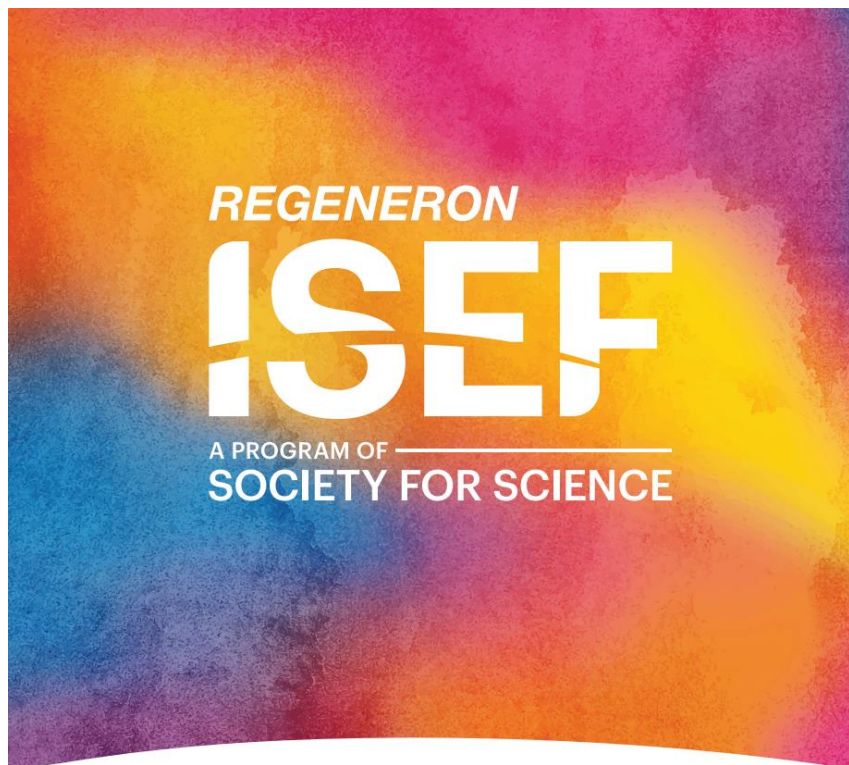
- Make sure you have a testable question or design goal.
- Check out our video guides on formulating *Your Research Question* and *Your Hypothesis*.
- Plan your experimental procedures.
- Make sure any forms that require signatures before the start of experimentation are ready to go. See our *Forms & Rules Page* to learn more.
- Check your project plan against *All DMRSEF and ISEF Rules*. Reach out to the DMRSEF team if you have questions!
- If you are working with a team, have a clear plan for collaboration and division of work.
- Work with your adults to ensure your project plan and materials are ready to go before beginning your experiments.
 - Check out our video on *Methods and Materials*.
- Obtain any necessary pre-approvals from review boards (IRB/SRC/IACUC).
 - Learn more about *Regulatory Bodies* in this video.
 - Check out the helpful *SRC Preapproval Flowchart* from CSEF.
 - Reach out to the DMRSEF team if you need assistance with preapproval.

Step Two: Getting Involved

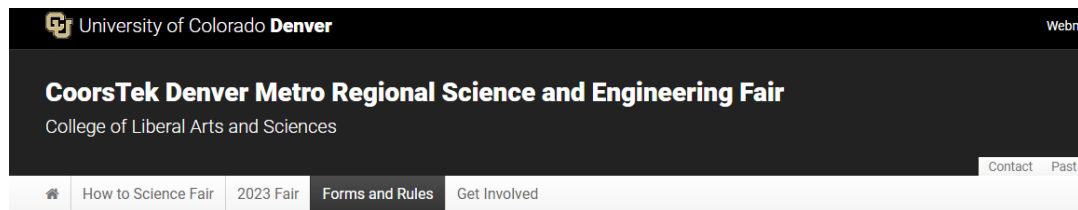
- Join our *Monthly Newsletter* for updates from the DMRSEF team.
- Attend a Season Kickoff event.
- *Register yourself* for the fair **you do not need a completed project to register!**
- **Sign up to participate** in *pre-season events* for help along the way.
 - Register for *Science Fair Workshops* on everything from completing your paperwork, to assembling your fair materials, to practicing for your judge interviews

Where to Start? Getting a Project Idea!

- Start with topics that interest you!
- Brainstorm a list of questions you have about things that interest you or the world around
- Listen to *Science Friday* on NPR or watch *How It's Made* or *Mythbusters*
- Talk to friends, teachers, parents, mentors about science things and see what questions they have
- Check out previous projects in DMRSEF or ISEF online



**INTERNATIONAL RULES
FOR PRE-COLLEGE SCIENCE RESEARCH
GUIDELINES FOR SCIENCE AND ENGINEERING FAIRS 2022-2023**



Forms and Rules

Ready to begin your project? All posted forms and rules have been updated for the 2022-2023 season!

- [ISEF 2022-2023 Rules](#)
- [ISEF Rules Wizard](#)
- [Do I need pre-approval?](#)

Forms Required for All Projects

- [Form 1 - Checklist for Adult Sponsor](#)
- [Form 1A - Student Checklist](#)
- [Form 1B - Approval Form](#)
- [Form 3 - Risk Assessment Form](#)
- [CU Denver Participant Waiver](#)

Project-Dependent Forms

- [Form 1C - Regulated Research Institutional/Industrial Setting Form](#)
- [Form 2 - Qualified Scientist Form](#)
- [Form 4 - Human Participants and Informed Consent Form](#)
- [Human Informed Consent Template \(Need with Form 4\)](#)
- [Form 5A - Vertebrate Animals Form](#)
- [Form 5B - Vertebrate Animals Form](#)
- [Form 6A - Potentially Hazardous Biological Agents Form](#)



Regulatory Bodies and Project Pre-approval

- Sometimes projects need **pre-approval** before the start of experimentation
 - **Human Subjects**
 - **Animal Subjects**
 - **Potentially Hazardous Biological Agents (PHBAs) or other high-risk activities**
- **Where** you are conducting the project will determine **who** will need to preapprove
 - **Home/School/Field**
 - **Industrial Setting or Regulated Research Institute (RRI)**
- **School (Local) SRC/IRB**
 - No one on the board can be directly related to the student's project (i.e. teacher or parent)
 - Minimum of 3 members
 - An educator
 - A school administrator (preferably principal or vice principal)
 - A professional with the expertise to evaluate the physical/psychological risk of the study (nurse, psychologist, doctor, social worker, etc.)

FROM START TO SCIENCE FAIR

LEARN MORE AT:

CLAS.UCDENVER.EDU/DENVERSCIENCEFAIR

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How To Science Fair

Step Four: Start Experimenting

- Complete your paperwork (Some forms must be completed prior to the start of experimentation!)
 - All forms can be found on the [Forms and Rules page](#) of our website.
 - Use the [ISEF Rules Wizard](#) to determine which forms your project requires.
 - The [Denver Science Fair's Guide to ISEF Forms](#) video playlist walks you through how to complete your paperwork in short videos.
- Gather your materials.
- [Conduct your experiment.](#)
 - Check out our video on [Your Experiment.](#)
- Take good notes as you go, including pictures and videos of your experiment and procedures.

Step Six: Get Fair Ready

- Familiarize yourself with virtual and in-person [display and safety regulations.](#)
- Begin creating virtual AND physical display materials.
ONLINE MATERIAL SUBMISSION OPENS: JANUARY 22, 2024
ALL MATERIALS MUST BE UPLOADED BY: FEBRUARY 9, 2024
 - Check out our video on [Preparing Your Poster.](#)
 - Our [Competition Ready Series](#) video playlist on YouTube includes recordings of last year's virtual help sessions.
- Attend [Science Fair Workshops](#) to help prepare your materials.
- Practice presenting and answering questions to stay familiar with your project.
- [Work with the SRC](#) to correct any errors in your project/paperwork submission.
FINAL CORRECTIONS DUE BY: FEBRUARY 16, 2024
- Keep an eye on your inbox for Display and Safety approval or corrections needed on your virtual display materials.
FINAL CORRECTIONS DUE BY: FEBRUARY 16, 2024

Step Five: Complete Your Project

- [Analyze your findings.](#)
 - Check out our video on [Conclusions.](#)
- Be sure to complete and double-check your paperwork.
 - Keep an eye out for [pre-season events](#) designed to help with this process!
- Determine the proper category for your project.
 - Check out our [Complete Category Guide.](#)
 - Our regional SRC will verify this is the right selection when reviewing your project submission.
- [Submit your project details and paperwork to DMRSEF.](#)

PROJECT REGISTRATION OPENS: OCTOBER 1, 2023

EARLY-BIRD REGISTRATION CLOSES: DECEMBER 15, 2023

FINAL PROJECT REGISTRATION CLOSES: JANUARY 12, 2024

Step Seven: Celebrate Your Science

2024 DMRSEF: FRIDAY, FEBRUARY 23, 2024

AWARDS CEREMONY: FEBRUARY 25, 2024

- Make sure you have everything you need ready ahead of time (poster, paperwork, lab notebooks, etc).
- Communicate with your teachers, chaperones, and parents for drop-off and pick-up schedules.
- Dress professionally and wear comfortable shoes!
- Be prepared for a weekend of science celebrations!

What You Will Need to Compete:

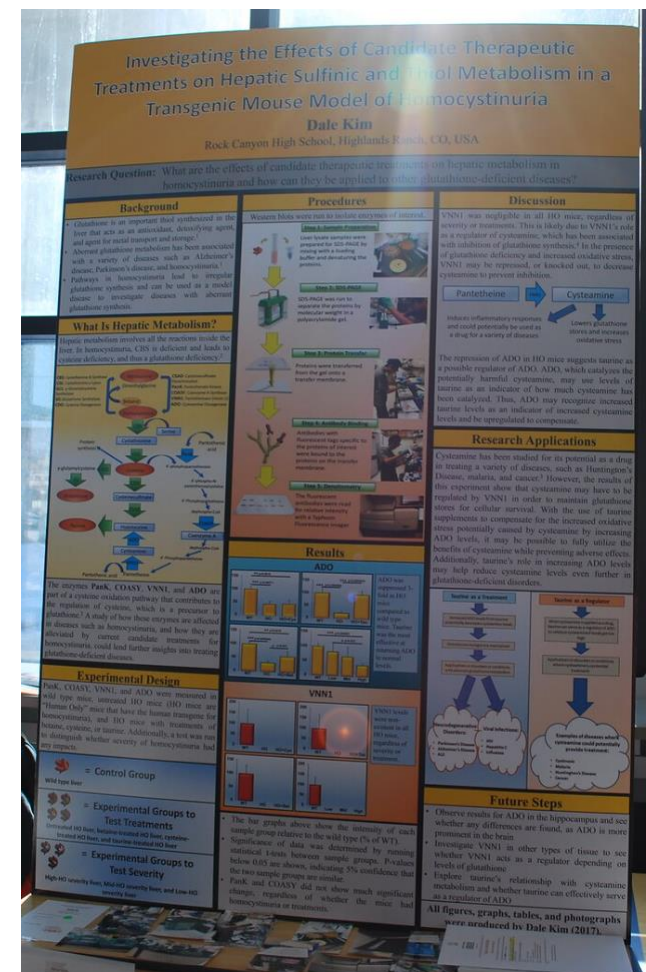
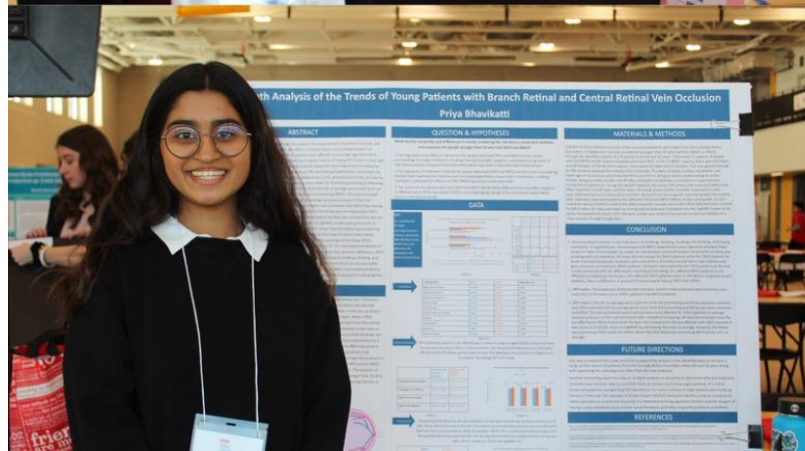
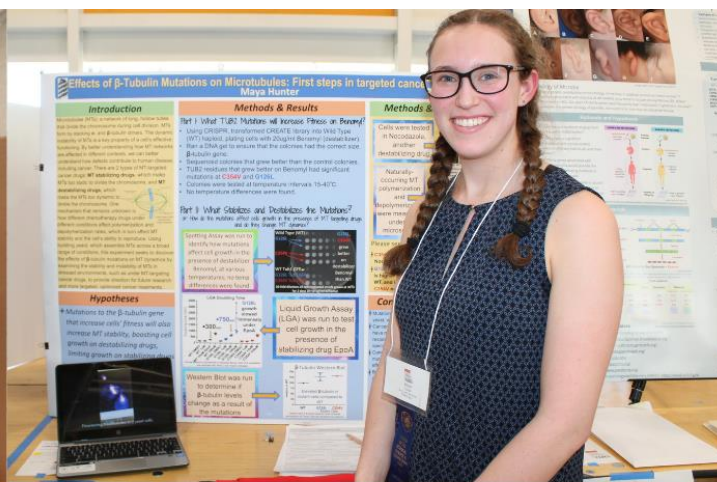
BRING TO THE FAIR

- **Physical poster board**
- Optional physical materials: Notebook, Demos

UPLOAD TO SYMPOSIUM

- **2-3 Minute Introduction Video**
- **Digital Poster Slide Deck**
- Optional digital materials: Demo video, Supporting documents

Physical Poster Board



Virtual Poster (Slide Deck)

Required Materials

PROJECT PRESENTATION

- Project Presentation must be a single PDF document of no more than 12 pages.
- Page size must not exceed 8½" x 11" and should be in Landscape orientation.
- The PDF document must not include any animations or active hyperlinks (except for original source material in the references).
- The information on each page must be readable.
- The PDF document must open with the default magnification set to "Fit Page" so that the entire page is visible at the same time.
- All Project Presentation elements must conform to the same Display & Safety rules as the in-person fair. See page 4 for details.

DESIGNING YOUR SLIDES:

We recommend starting with one of the following pre-made templates:

- Science Projects
[PowerPoint Template](#) | [Google Slides Template](#)
- Engineering Projects
[PowerPoint Template](#) | [Google Slides Template](#)
- Math/Computer Science Projects
[PowerPoint Template](#) | [Google Slides Template](#)

If using provided templates, do not change the page settings on the template – they are set up so that the template will print to pdf with the correct page size (8½" x 11") and orientation (Landscape).

You may add more slides as needed to the template, up to a maximum of 12 printed pages

Please be aware that if your progress to future competitions, your presentation may need to be adapted to fit their (stricter) requirements, such as black font on a white background.

At DMRSEF, however, you are encouraged to use your creativity to engage your audience in your project as long as you remain mindful of both professionalism and readability.

[CLICK HERE](#) to visit the 2021 DMRSEF Virtual Project Showcase for inspiration!



DMRSEF Staff will be hosting a Presentation Preparation call on 1/19/2022 over Zoom, you can register [HERE](#) to join!

Page 1

Quantitative Methods to Analyze the Synergism of Digestive Enzymes for Gluten Breakdown: A step closer to making Glu-relief pills.

Voiceover



Presenter(s)(s)

Aditi Avinash

Project Number

SR-MED-006

Optional: Supplementary Materials

<https://docs.google.com/document/d/1nHnzbyvkFsHyYASLUBRvyq-pY6YP0-l1TEXx8SI2T3c/edit?usp=sharing>

Abstract or Description

Millions of people in the USA alone suffer from celiac disease or gluten intolerance. In previous work, I identified three fruit-derived enzymes that when combined have an efficient effect in gluten breakdown (Papain, Bromelain, and Actinidin). This year, I pursued quantitative identification of a

The screenshot shows a Google Slides presentation with the following content:

- Slide 10 of 12:** Titled "Conclusion". It features a central yellow box with the text: "All of the below factors are important to take into consideration when manufacturing a pill:" followed by three bullet points:
 - o The combination of Papain, Actinidin, and Bromelain **synergistically** increased the breakdown the gluten in wheat flour in the **ratio 1:2:3 (P:B:A)**
 - o These enzymes failed to function in the in the presence of alcohol
 - o Preservatives such as citric acid inhibited the activity bromelain in gluten breakdown
- Below the bullet points, it states: "This data addresses my *hypothesis* because this newly identified combinatorial ratio of the 3 enzymes informed us of the enzyme mixture formulation." and "This data addresses my *research question* because it confirmed the three enzymes have proteolytic enzymes and able to find specifications of the combination such as the breakdown of gluten was enhanced when the three enzymes worked together synergistically, and the ratio."
- Section: WHY ARE THESE CONCLUSIONS IMPORTANT**
This may be a possible remedy for those with gluten intolerance. The idea of the combination of Papain with Bromelain and Actinidin synergistically breaking down gluten proteins is a novel finding.
- Slide 11:** Titled "Future Work and Other Factors". It features a yellow box with the text: "I want to move this project **from bench to bedside**. I will achieve this goal by" followed by three bullet points:
 - o Learning more about manufacturing a pill.
 - o Contacting drug developing companies or labs to discuss my idea of creating a "Glu-Relief" pill,
 - o Manufacturing GMP grade pill
 - o To conduct clinical trials to see if "Glu-Relief" pill, alleviates symptoms of gluten intolerance in affected patients.
- Below the bullet points, it states: "I want my research to make a difference in these patients life."
- At the bottom, there are two boxes: "VARIATION OF DATA:" and "POSSIBLE ERRORS:".

[Online: Student Materials Guide](#)

Introduction Video

PROJECT VIDEO

What to include in your video?

Introduce Yourself:

- State your full name
- You may include your school and/or town if you wish
- Rather than reciting your project title, consider explaining your project in one or two sentences.

Explain Your Project:

- Summarize your research:
 - What did you do?
 - What did you find?
 - What conclusions did you draw?
- You may use props or visuals as long as they are within the Display & Safety guidelines (see page 4).

Tips for Filming:

- Film in a well-lit and non-distracting environment
- For best results, film your video horizontally (landscape).
- Keep the camera still and in place during filming.
- Speak clearly and loudly enough that the recording is able to pick up every word you say.
- Avoid long pauses and filler phrases
- Listen to your video after recording to ensure your voice is clear and audible, and that the video has not picked up too much background noise.

Posting and sharing your video

Your introductory video **must be linked from YouTube**, demos and optional materials may be uploaded into google drive. See below for full instructions.

- In YouTube, your video may be uploaded and posted as "unlisted" so that only those with a direct link can access it. Unlisted videos are not searchable or available to the public. You can choose to list your video publicly but should check with your parent or guardian before doing so.

- Google Drive is also a sharing option. Remember to set permissions so that anyone with the link can view your video.

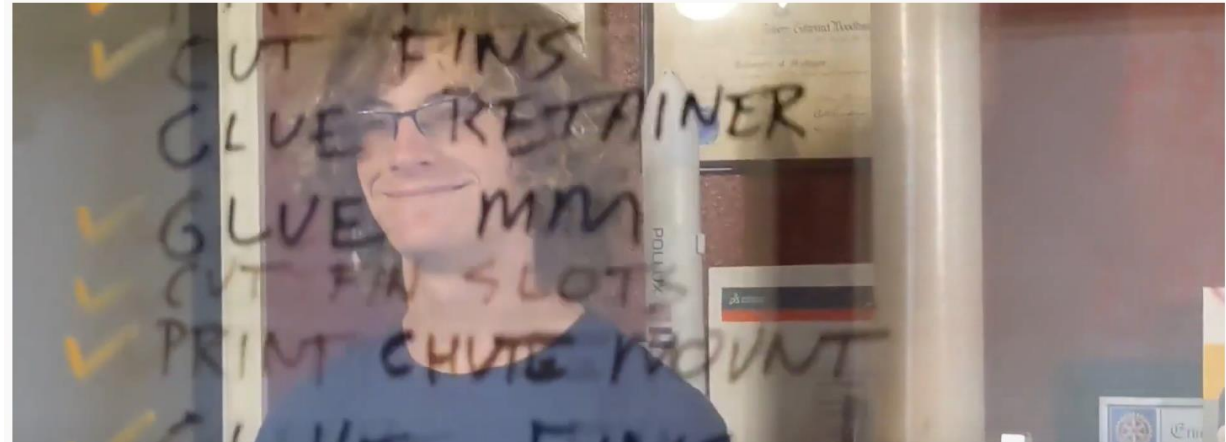
Please Remember:

- **Videos should be no longer than 2-3 minutes and should broadly summarize your project.**
- **Students are the only individuals allowed to appear in the video, however, they are not required to do so.**



DMRSEF Staff will be hosting a Video Preparation call on 1/26/2022 over Zoom, you can register [HERE](#) to join!

Page 2



Rhys Hanson- To Ap



[Online: Student Materials Guide](#)

PLEASE EVALUATE THE PROJECT ON THE FOLLOWING ELEMENTS:

Criteria:	Score:	Notes:
Research Question	/10	
Design & Methodology	/10	
Execution	/10	
Creativity	/10	
Poster (slides)	/10	
Introductory Video	/10	
Interview	/10	

Year-Round Support & Events

Fair Timeline

- **Registration Opens:** Sunday, October 1, 2023 (TODAY)
- **Early Bird Reg. Closes (\$40):** December 15, 2023
- **Registration Closes (\$50):** Friday, January 12, 2024
- **Virtual Material Submissions Open:** January 22, 2024
- **Virtual Material Submissions Closed:** February 9, 2024
- **Paperwork Corrections Due:** February 16, 2024
- **Virtual Materials Corrections Due:** February 16, 2024
- **DMRSEF:** Friday, February 23, 2024
- **Awards Ceremony:** Sunday, February 25, 2024

Science Fair Workshops

Get yourself and your project fair-ready with specialized workshops for every step of the way!

December 2023						
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

January 2024						
Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February 2024						
Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

- **Monday, December 11th 6-7p: Paperwork Workshop**
- **Wednesday, January 10th 6-7p: Paperwork Workshop**
- **Thursday, January 25th 6-7p: Materials Workshop**
- **Thursday, February 8th 6-7p: Interview Workshop**
- **Thursday, February 15th 6-8p: Interview Practices**
- **Wednesday, February 21st 6-8p: Interview Practices**



Online Resources

Click on each step to learn more!

- + 1. Planning & Preparing
- + 2. Getting Involved
- + 3. Designing Your Project
- + 5. Complete Your Project
- + 6. Get Fair Ready
- + 7. Celebrate Your Science
- + 8. Go Beyond DMRSEF

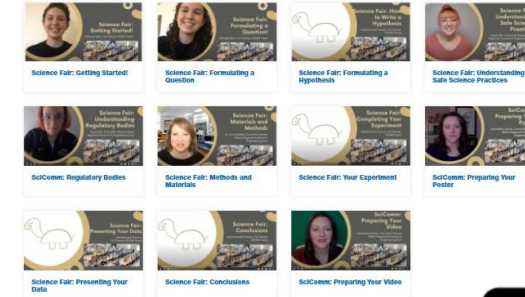
How to Science Fair



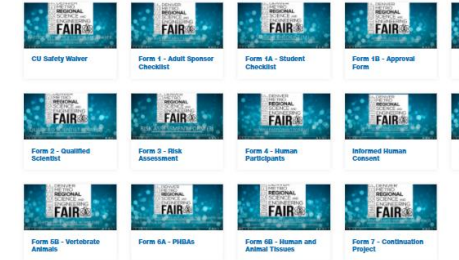
Project Resources

Everything from project ideas, help with forms, and explanations of the science fair process can be found here!
Still can't find what you are looking for? Reach out to Communications@dmrsef.edu and we will point you in the right direction!

Need some help along the way? Start here!



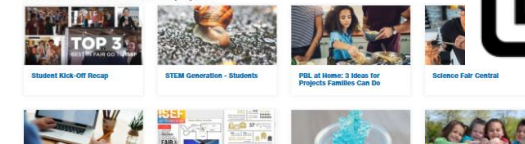
How to complete your ISEF forms:



Additional Resources by Topic:

- General Science Skills
- 3D Printing and Digital Design
- Aerospace
- Earth Science
- Engineering and Design
- Health
- Math
- Physics
- Psychology

Resources for at-home science projects:



Resource Library



Human Resources: Student Advisory Council



“The Student Advisory Council (SAC) is a group of passionate students dedicated to the Denver Metro Regional Science and Engineering 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.”

**FUNDING
AVAILABLE TO
SUPPORT STUDENT
SCIENCE FAIR
PROJECTS!!!**

**Want to participate in the DMRSEF?
Need funds for your science fair project?**

Grants Available!

Funding is available for student mini-grants for the 2023 Denver Science Fair. Apply by October 21st for grants of up to \$100 to complete your research project for this year's fair!

We want to fund your science!



Apply by:
5 PM on Friday
October 21th



Awards:
Up to \$100
per project



Participate:
Learn more and
apply at
<https://bit.ly/dmrsefgrants>

How Can You Support the Science Fair?

Give Time

- Volunteer at the fair
- Volunteer as a mentor
- Join the Community Advisory Council or Operating Committee

Give Money

- Donate to our Crowdfunding Campaign
- Sponsor a Special Award (you or your company)

Give Connection

- Tell people about our science fair
- Connect us with community partners and organizations

DMRSEF



@DenverScienceFair



@DMRSEF



@DenverScienceFair



@Denver Science Fair (DMRSEF)



@DMRSEF

#DMRSEF #DenverScienceFair

This is what a Scientist looks like

<https://clas.ucdenver.edu/denversciencefair/>
Denversciencefair@ucdenver.edu