Ethics in Science Fairs, Innovations, & Research

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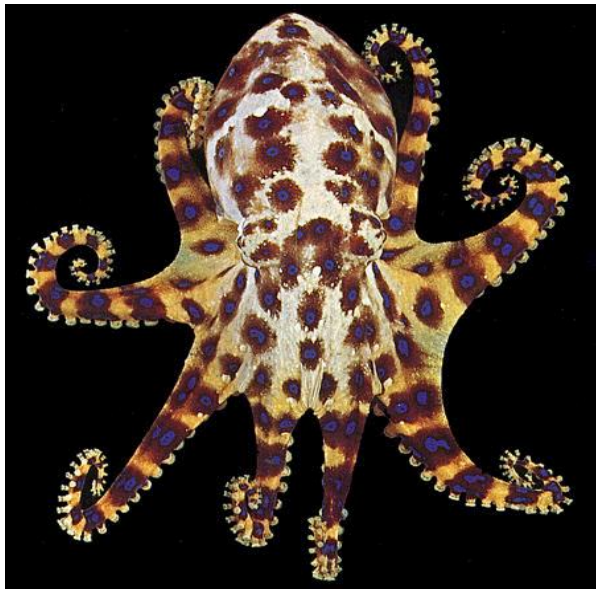
Ethics and Safety

- **Which projects should have ethics approval?**
- **Why should projects have ethics approval?**
- **What to do if your project requires ethics approval**
- **Safety**
- **Examples**

Which projects should have ethics approval?

Projects involving

- **humans**
- non-human **animals** (ideally, any projects involving any animals, but **mandatory** for **cephalopods** and **vertebrates**)
- **animal** (including human) **tissues**



Why should projects have ethics approval?

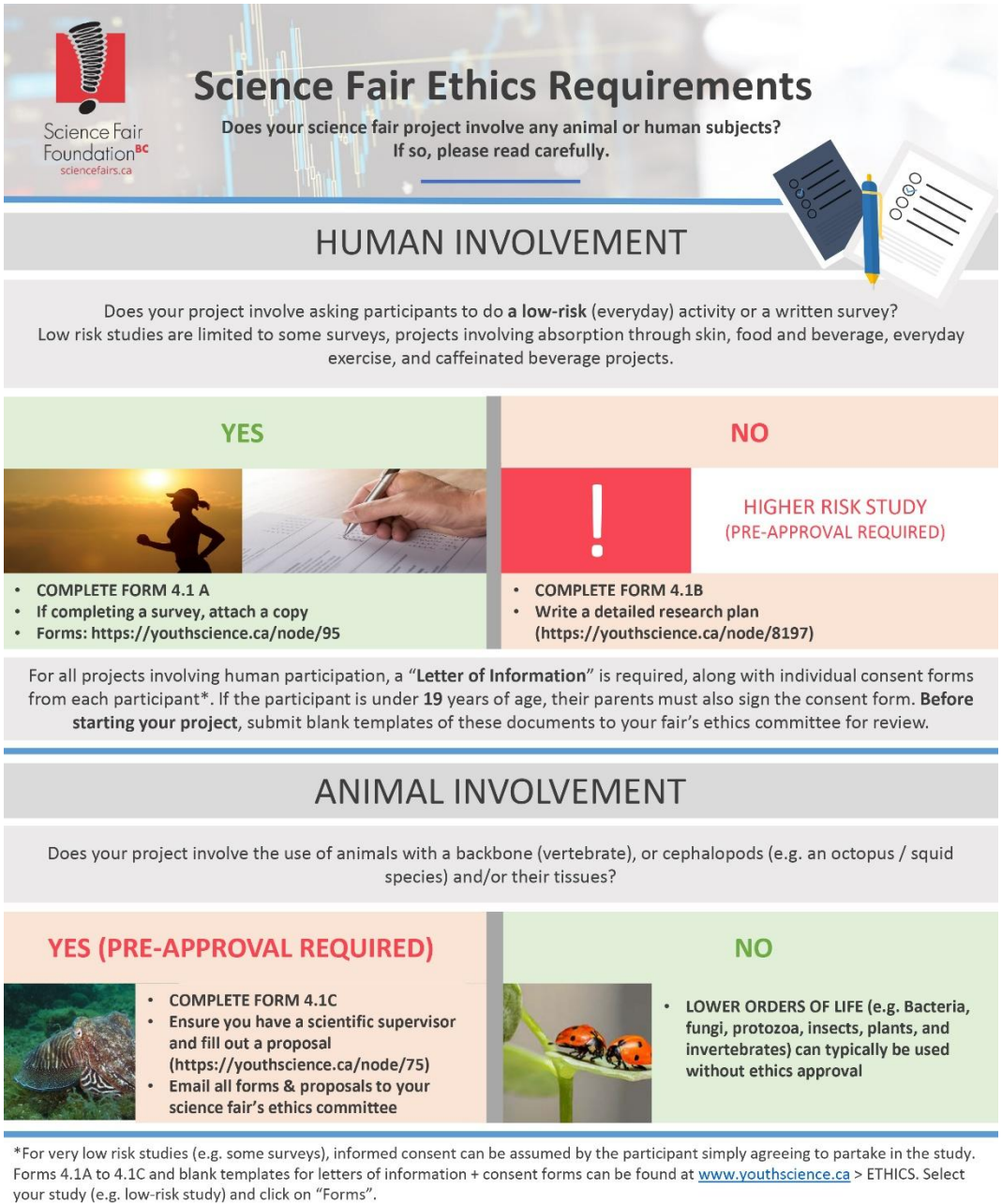
- **Treat others with**
  - **respect**
  - **dignity**
  - **sensitivity**

- **Make sure to**
  - **keep everyone** (including yourself) **safe**
  - **prevent harm and stress**

  - **maintain privacy** (allows people to control their personal information)
  - **maintain confidentiality** (obligation to protect personal information entrusted to you)

What to do if your project requires ethics approval

Assess risk levels



https://www.sciencefairs.ca/website/media/ScienceFairs/Resources/GVRSF-Ethics-Handout-Light.pdf

Science Fair Foundation BC
sciencefairs.ca

Science Fair Ethics Requirements

Does your science fair project involve any animal or human subjects?
If so, please read carefully.

HUMAN INVOLVEMENT

Does your project involve asking participants to do **a low-risk** (everyday) activity or a written survey?
Low risk studies are limited to some surveys, projects involving absorption through skin, food and beverage, everyday exercise, and caffeinated beverage projects.

YES

- **COMPLETE FORM 4.1 A**
- **If completing a survey, attach a copy**
- **Forms: https://youthscience.ca/node/95**

NO

HIGHER RISK STUDY
(PRE-APPROVAL REQUIRED)

- **COMPLETE FORM 4.1B**
- **Write a detailed research plan (https://youthscience.ca/node/8197)**

For all projects involving human participation, a "**Letter of Information**" is required, along with individual consent forms from each participant*. If the participant is under **19** years of age, their parents must also sign the consent form. **Before starting your project**, submit blank templates of these documents to your fair's ethics committee for review.

Ethics in STEM Projects: Working with Humans

https://youthscience.public.doctract.com/doctract/documentportal/08DAEF4FCB7D3B432AB676C340C04CF5

- Projects are either **low risk** or **significant risk**
- **Low Risk**
  - the risk of harm to participants is not greater or more likely than everyday life
  - Projects are ***probably*** low risk if they are
    - surveys
    - exercise experiments
    - food and drink experiments
    - caffeinated beverage experiments
    - absorption through the skin experiments
- **Significant Risk**
  - any project that is not low risk is considered significant risk → must follow stricter rules
  - read more about these types of projects in YSC's Participation of Humans in Research – Significant Risk policy

Ethics in STEM Projects: Working with Humans

- **Observing, surveying, or testing others**

- **Projects must**
  - have an **adult supervisor** to provide advice on STEM ethics
  - **provide** Letter of Information
  - **get consent** (Permission Form) from participants (parents, if under 18)

Consent form for projects involving humans

Informed Consent – Letter of Information Template

Good STEM is ethical STEM! It is important to make sure your idea will not harm or be unethical towards people. If your idea involves people, either in Low Risk or High Risk participation, **before beginning**, you must prepare a Letter of Information for your participants. This means they have all the information they need to understand your project and how they will be participating before they agree to participate. This is called *informed consent*. It is a simple way to make sure you're doing ethical STEM, and making the safety and wellbeing of your participants your first priority.

Develop and share this letter with your adult supervisor – they can be a teacher, parent, guardian, mentor, or anyone supporting you with your idea.

On the next pages, follow these steps to develop your Letter of Information:

1. **Adult and Scientific Supervisor(s)** Who will be supporting you with your idea? When working with people, it is important to also have a scientific supervisor. Your adult supervisor can be your scientific supervisor too, if they are qualified to support you in the area of STEM you are working in.
2. **Data Collection** When will you start and stop collecting data from participant(s)?
3. **Location** Where you will be collecting your data?
4. **Purpose** What is your idea looking to achieve? Briefly explain the research you did to support your idea. Explain the general procedure you will be using.
5. **Benefits from Participating** What are the benefits to a participant from participating?
6. **Risks from Participating** What are the risks to a participant from participating?
7. **Time Commitment Required** How much time will a participant be expected to contribute?
8. **No Renumeration** No remuneration or reward will be paid. It is the policy of Youth Science Canada that incentives not be offered for participation in projects.
9. **Confidentiality of Data** How will you guarantee the confidentiality of participant data?
10. **Withdrawing from the Project** Explain that each participant has the right to withdraw from the project at any time, and for any reason. Describe how the participant communicates the decision to withdraw from the study.
11. **Results** How will the results of the research be communicated to the participant?
12. **Ethics Approval** Before starting your project, you need to get ethics approval. Note you have ethics approval (and the date you got it) from your regional fair.

Once the Letter of Information is complete, print off the next 3 pages (not this instruction page) and give a copy of it and a Permission Form to each participant in your study.

If you choose to participate in a science fair, you may be required to share this plan.

>mySTEMspace

Youth Science Canada
Sciences jeunesse Canada

Consent form for projects involving humans

Informed Consent – Letter of Information

1. Student Researcher(s), Adult and Scientific Supervisor(s)

Project Title				
Regional Science Fair				
	First Name	Last Name	Email	
Student 1				
Student 2				
Adult Supervisor[1]				
Scientific Supervisor				

2. Data Collection

Start Date	
End Date	

3. Location

4. Purpose

1 This person can also be the Scientific Supervisor, if they are qualified to support the project's area of STEM

5. **Benefits from Participating**

6. **Risks from Participating**

7. **Time Commitment Required**

8. **No Renumeration**
   No remuneration or reward will be paid to participants. It is the policy of Youth Science Canada that incentives not be offered for participation in projects.

9. Confidentiality of Data

10. Withdrawing from the Project

11. Results

12. Ethics Approval

This project received ethics approval from Pat Whippey Ethics Chair for the TVSEF Regional Science Fair, on this date: 15-Feb-2022.

General Consent Form for Human Participants in a Science Fair Project

Student Conducting Experiment	DD / MMM / YYYY
(Name of Student Conducting Experiment)	(Date)
Name of Teacher	School Name
(Supervising Teacher)	(Name of School)

Purpose of the Experiment: (Project Title)
Enter the Project Title
Enter the description of the project

What is required of the student participant:

Describe what is required of the student participant		
(Name of Student Participant)	(Date)	Signature
☐ (Yes / No) I have read and understand the conditions and risks above, and I consent to participate in this research study.		
(Name of Parent)	(Date)	Signature
☐ (Yes / No) I give permission for my child to participate in this science fair activity.		

https://www.virsf.ca/wp-content/uploads/2020/01/Consent-form-human-participation.pdf

Signed consent forms

- ✓ **should be kept in a safe place (privacy!)**
- ✓ **should be available during the fair**
- ✓ **are not part of the project report**

Some considerations: Animals

- **absolutely**
  - ✓ **<u>No injury or abuse</u> to animals and humans**
  - ✓ **<u>No stress!</u>**

Form for ethics approval request

2025 Vancouver Island Regional Science Fair
Request for Ethics Approval

School Name				
Project Title				
	First Name	Last Name	Email	Phone
Student 1				
Student 2				
Adult Supervisor				
Scientific Supervisor				
This project involves (circle one):	Humans	Animals	Human/Animal Tissue	Microorganisms

Note: Your Scientific Supervisor must have appropriate credentials depending on the level and subject matter of your project.
For more information contact the Ethics Committee at rmmarx@uvic.ca

Please provide a brief description of your project (less than 200 words).

https://www.virsf.ca/wp-content/uploads/2024/10/VIRSF_Ethics_Fillable.pdf

For Projects Involving the Participation of Humans

Describe any special precautions taken for the project.

Where will you carry out the experiments?

Please describe the qualifications of your scientific supervisor.

How many people will be participating in your experiment? What are their ages?

As part of your Request for a Ruling, you must also submit:

- A blank copy of your Informed Consent Form that will be distributed to participants
- A copy of the Letter of Information provided to all participants
- A copy of the Survey/Test (if your project involves a survey or test)

Please keep a copy of this form for your records.

For Projects Involving the Participation of Humans

Request for Ethics Approval

I have read and understand the information provided on Youth Science Canada's website regarding ethics and the ethical standards of including humans in scientific research; and acknowledge that, by including humans as part of my project, I have a duty to protect the well-being, dignity, and privacy of those individuals.

Signature - Student 1 _____ Date _____

Signature - Student 2 _____ Date _____

Signature - Adult Supervisor _____ Date _____

Signature - Scientific Supervisor _____ Date _____

Ethics Approval

I certify that this scientific project involving the participation of humans is in full compliance with Youth Science Canada's Policy on Ethics: Participation of Humans: Low Risk and/or Significant Risk, and that it is eligible for the 2025 Vancouver Island Regional Science Fair and the Canada Wide Science Fair.

Signature - Ethics Committee Member _____ Date _____

For Projects Involving the Use of Chordates and/or Cephalopods

Describe any special precautions taken for the project.

Where will you carry out the experiments?

Where will you obtain the chordates/cephalopods? How will they be cared for during your project?

What will happen to the chordates/cephalopods after your project is finished?

Please keep a copy of this form for your records.

For Projects Involving the Use of Chordates and/or Cephalopods

Request for Ethics Approval

I have read and understand the information provided on Youth Science Canada's website regarding ethics and the ethical standards of including animals (chordates and/or cephalopods) in scientific research; and acknowledge that, by including chordates and/or cephalopods as part of my project, I have a duty to protect the welfare and dignity of those chordates and/or cephalopods.

Signature - Student 1	Date
Signature - Student 2	Date
Signature - Adult Supervisor	Date
Signature - Scientific Supervisor	Date

Ethics Approval

I certify that this scientific project involving the participation of chordates/cephalopods is in full compliance with Youth Science Canada's Policy on Ethics: Participation of Invertebrate and Vertebrate Animals, and that it is eligible for the 2025 Vancouver Island Regional Science Fair and the Canada Wide Science Fair.

Signature - Ethics Committee Member	Date

For Projects Involving the Use of Microorganisms

Request for Ethics Approval

I have read and understand the information provided on Youth Science Canada's website regarding ethics and the ethical standards of including microorganisms in scientific research; and acknowledge that, by including microorganisms as part of my project, I have a duty to protect the welfare and safety of myself and those around me.

Signature - Student 1	Date
Signature - Student 2	Date
Signature - Adult Supervisor	Date
Signature - Scientific Supervisor	Date

Ethics Approval

I certify that this scientific project involving the participation of microorganisms is in full compliance with Youth Science Canada's Policy on the use of microorganisms, and that it is eligible for the 2025 Vancouver Island Regional Science Fair and the Canada Wide Science Fair.

Signature - Ethics Committee Member	Date

For Projects Involving the Use of Microorganisms

Describe any special precautions taken for the project.

Where will you carry out the experiments?

Where will you obtain the microorganisms? How will they be handled during your project?

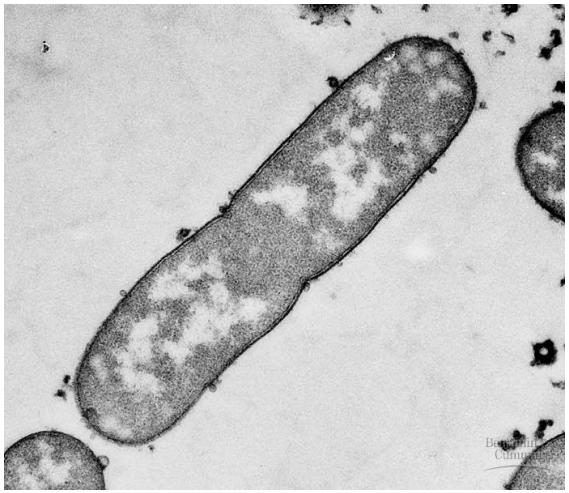
What will happen to the microorganisms after your project is finished?

Please keep a copy of this form for your records.

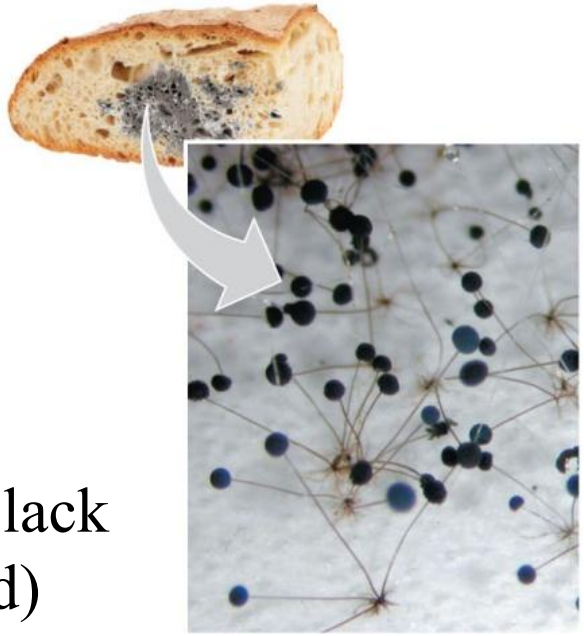
Safety when working with Microorganisms

Projects involving

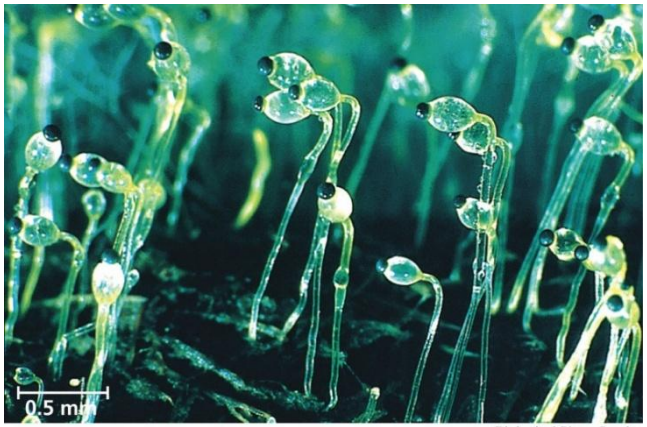
- **microorganisms *(e.g.* bacteria, fungi)**



E. coli



Rhizopus (black bread mould)



Pilobolus

Safety when working with Microorganisms

- **When you grow them up,**
  - **you multiply the Good and the Bad!**

- **Where to keep them?**
  - ✓ **ideally, in an incubator in a science lab with proper safety levels**
  - **NOT in a private home on top of the refrigerator!**

Safety when working with Microorganisms

- **How to protect oneself?**
  - ✓ **wearing masks**
  - ✓ **wearing gloves**
  - ✓ **working in a ventilated area when necessary**

Safety when working with Microorganisms

- **How to dispose of them after the project is done?**
  - ✓ **ideally, Petri dishes should be autoclaved**
  - ✓ **alternatively, pour bleach on the dishes**
  - ✓ **dispose of the dishes in a biohazard bag**

Some examples: Letter of information

Where will the Experiment be Carried Out?

All testing will be carried out in a small, separate paddock directly beside the main paddock at Heart Lake Farm. This is the location where the horses currently receive special treatments for diet, health and general maintenance. The horses live at Heart Lake Farm and are cared for one site. They will not be moved elsewhere during the testing to any other location. They will be cared for as they always are, by the team at the Farm.

Who is your Scientific Supervisor and what are their qualifications?

My scientific supervisor is I She is a doctor of veterinary medicine.

√!

For this study I will also be seeking the advice of the farm owner, meeting all care requirements with proper grooming tools. Any heart-rate testing devices (such as heart rate monitors or stethoscope) will not cause any pain. As well, all harnesses and lead ropes will be equipment that is used currently on a daily basis.

Where will I obtain the horses?

There are eight horses who live at a large farm in and they are part of the EAL program I participated in.

How will they be cared for during this study?

As the horses live at the farm, they have a full time caregiver who lives on site and cares for them. The owner and members of the equine therapy team take very good care of them!

What will happen to the animals when the project is finished?

The horses will continue their primary function as therapy animals for the EAL program for which they were selected initially.

5. Benefits from Participating

The benefit of participating is to help me finsh the project.

6. Risks from Participating

It has not risks.

7. Time Commitment Required

I will need you for 15-30min affter school.

8. No Renumeration

No remuneration or reward will be paid to participants. It is the policy of Youth Science Canada that incentives not be offered for participation in projects.

Needs some work

Getting your ducks in a row

- **Start early!**
- **Have a supervisor**
- **Do your research**
- **Determine if your project requires ethics approval**
- **Assess the risk**
- **Apply for ethics approval**
- **Identify your participants**
- **Provide letter of information**
- **Get consent forms signed**
- **Send thank-you letters!**

See also: https://www.sciencefairs.ca/learn/science-fair-guide/