Tamil Cultural and Academic Society of Durham
Science Fair 2012

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Registration

1. Students participating in the Tamil Cultural and Academic Society of Durham Science Fair must have the student package.
2. Complete the registration form for each project and the parent/guardian permission form for each participant and fax it to 905-492-1008 or email to info@tamilsocietydurham.com also call to **verify at 905 999-8707.**
3. A non-refundable registration fee of $ 20/contestent must be paid by cash or cheque to Tamil Cultural and Academic Society of Durham upon registration or latest by May 21st, 2012.
4. Complete the project "Safety Checklist" and Project Summary form and include with your project board on the day of the fair.
5. All questions regarding the fair should be addressed to the above number.
6. Location: **Pickering High School, Ajax**

Rules

1. To be eligible, a student must be under 21 years of age and attending classes from Grade 3-12, in a public, separate or private school.

2. Deadline for entry is **May 21st, 2012**. Late entries will not be accepted.

3. Group exhibits (those made by more than one student) are eligible. A group shall consist of not more than 4 students from Grade 3-6, or 2 students from Grade 7 to Grade 12. All group members must be in the same grade. Monetary award for group projects will be divided among the number of team members.

4. An exhibitor may not present more than one exhibit.

5. It is essential that the student(s) and parents read the Safety Regulations and then complete the safety checklist to ensure that the project will not be disqualified.

6. The date of the set-up and **judging is on Sunday June 3rd, 2012.**

7. Set-up projects on **Sunday June 3rd, 2012 between 9:00 — 10:00 am.**

8. Supervision for the participants at the fair is the responsibility of the parents.

9. Judging is from 10:00 – 2:00 pm and participants must stay with their projects the entire time. Bring something quiet to work on between judging. The exhibit will be open for public viewing between 2-3 PM.

10. Project removal by the participants occurs immediately after public viewing.

11. Only judges are permitted in the exhibit hall during judging. Students are dismissed upon the completion of judging.

12. The use of cell phone or other communication equipment during the judging process is prohibited.

13. All winners will be notified by phone the following week. The award ceremony will occur in February with the presentation of other competition awards.

NOTE: Neither the Tamil Cultural and Academic Society Science Fair committee, nor the facility is responsible for damage or for valuables lost or stolen during the fair. Students should keep the project area clean and tidy and proper conduct is expected from all participants during this event.

Project Requirements

14. A brief written description of the project is required. The description should include:

1. The project title
2. The purpose of the project
3. A brief description of procedures used
4. A brief summary of results
5. The conclusions drawn from the project.
    a. It may also include any possible research applications.
    b. The description must not exceed 500 words. Up to 10 marks are awarded by the judges for this description.

This description is also used to determine the project's eligibility for special awards.

Types of projects:

1) Experiment: Predict the results of a test you can perform. Carry out the test. Collect the results make sense of the results and draw conclusions.

2) Study: Collect a lot of information from observing the world around you. Consult books, magazines, experts, Internet, etc. Sort it out and summarize the important and interesting points. It may be difficult or impossible to control the variables.

Here are some project examples:

Life Science

- **Experiment**: What fertilizer makes flowers grow best?
- **Study**: On what side of a tree do robins build nests?

Physical Science

- **Experiment**: What material makes the best insulator?
- **Study**: Planets

Engineering

- **Experiment**: What affects the strength of a bridge?
- **Study**: Analysis of a family's energy consumption.

Computer

- **Experiment**: Writing a new computer program.
- **Study**: Uses of a commercial software package.

Project Construction

Backboard:

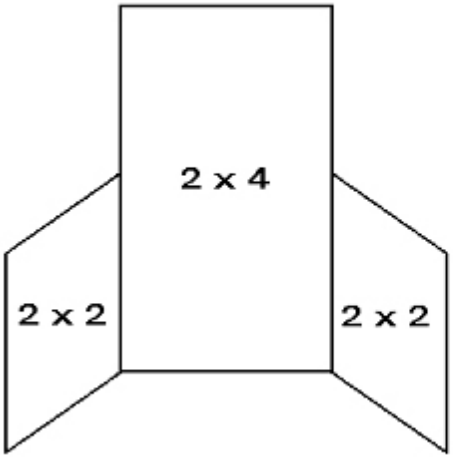
- Students usually use a 3-sided display.
- If you win a trip to the Canada-Wide Science Fair, you will have to use a Canada-Wide Science Fair approved backboard. If necessary, this backboard will be provided by the local committee.

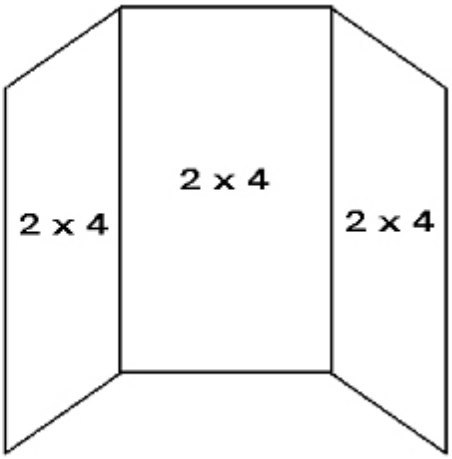
Display:

- All cloth, paper, etc. must be securely fastened to the backboard.
- Only single sheets may be attached to the backboard.
- Nothing may hang from the table.
- No wall may be used to support or display any part of your project.

Size:

- Half of a 1.2m (4') by 2.4m (8') sheet of material will make a good backboard, such as the one shown on the left, below. If you need more space, the one on the right can be made from a whole sheet of material.
- A table about 0.8m high will be provided to you. Your display can either stand on the table or on the floor. It must stand firmly by itself, with no danger of falling.





The **entire** project must fit into a space no larger than 1.2m wide by 0.8m deep by 3.5m from the floor.

Oversized projects must be reduced by fair opening time or they will be disqualified.

> (Project Information Gained from the Durham Regional Science Fair Website: https://secure.ysf-fsj.ca/sfiab/durham/web/rules.html)

Safety Regulations

General Safety

15. Projects must not involve living vertebrates except for observations of normal living patterns. No living vertebrates shall be displayed in exhibits. Part of vertebrates slaughtered for other purposes are permitted. For details contact the see the TCASD rules related to animal use.

16. 19. All projects are subject to inspection by the TCASD Science Fair committee. Serious problems arising from this inspection could result in the project being excluded from Fair.

- Safety to the public is a prime consideration. Suitable precautions must be taken to prevent the possibility of personal injury, property damage, and the legal action that could result from a lack of concern for safety.

- Exhibits must be sturdy with moving parts firmly attached and approved for safety. Each exhibit must be self-supporting. Electricity (AC 110 volt 60 cycle) will be supplied on request, but no gas or water outlets will be provided. Switches and cords must be of the approved variety and circuits must be protected by fuses. Cell or battery-fed circuits should be both safe in design and operation.

- All sharp edges or corners on prisms, mirrors, enclosures, and glass and metal plates must be removed or otherwise protected. The length of hoses or extension cords is to be kept to a minimum and out of the way to eliminate tripping hazards. Use tape for securing.

- Aisles and exits should not be obstructed.

- Moving exhibits (e.g., radio-controlled vehicles, robots) should be restricted to the regulation display space. The committee will endeavor to provide an area to safely demonstrate to judges projects that require more space than the regulated exhibit display space.

- The exhibit must comply with all TCASD safety regulations as outlined under the heading Regulations, Display of Animals & Animal Parts.

Fire Safety

Certain restrictions have been defined for the construction of displays to reduce the possibility of accidental fire during the fair, and in the event of fire, to allow for safe evacuation of the building.

- Combustible material must not be used near a heat source.

- Open flames must not be used.
- Smoking is not permitted in the exhibit area.
- Packing material must not be stored in the exhibit hall

Chemical Safety

- No containers of toxic or flammable chemicals are allowed.
- Dangerous chemicals are not allowed - this includes prescription drugs and over-the-counter medication. Substitutes for toxic and corrosive chemicals must be used. Common salt, for example,can be used to simulate chemicals such as ammonium nitrate. Water may be used instead of alcohol, ether, and other highly flammable liquids. Molasses can be used to represent petroleum products. When chemicals are simulated, they should be labeled with the names of the substance they represent preceded by the word 'simulated'.
- No project will be penalized because the key (but potentially dangerous) components were not on display.

Electrical Safety

- As low a voltage as possible must be used.
- A ground fault interrupter for electrical leaks and faults must be used.
- At the end of the day or the viewing period, all electrical exhibits must be disconnected, and power bars switched off.
- Only CSA-approved extension cords in good repair shall be used.
- Where practical and necessary, it is recommended that pilot lights be used to indicate that the voltage is on.
- Cord-connected electrical appliances should have a 3-wire conductor with ground or be CSAapproved.
- An insulating grommet is required at the point where the service enters any enclosure.
- Electrical devices must be protectively enclosed as far as it is practical.
- Any enclosure must be noncombustible. All non-current carrying metal parts must be grounded.
- No exposed live parts over 36 volts are allowed. Current (amperage) must be low so as not to cause any discomfort or danger if touched.
- Wet cells shall not be used because of the hazardous chemicals involved.

Structural and Mechanical Safety

- Exhibits must be of a safe design with adequate stability to keep from tipping.
- Dangerous moving parts such as belts, gears, pulleys and propeller blades must be suitably guarded.
- Pressurized vessels should have a safety valve.
- Compressed gas cylinders are not allowed.

X-Ray or Radiation-producing Equipment

- If an exhibit uses x-ray equipment or any other equipment capable of emitting high energy radiation, registration of ownership with the Ontario government is required.
- Plans for structural protection must be submitted to the provincial government and approval requested, for which both the owner of the device and the owner of the building are responsible.
- A formally trained and qualified individual must be identified to exercise supervision of the operation and to take responsibility for safe performance. It will be an obligation of this individual to satisfy the Chief Inspector by exposure rate measurements or other suitable documentation that the operation is safe.

• Projects involving voltages above 10 kV should be considered to pose a potential x-ray hazard.
• Lasers and x-ray or radiation-producing equipment may not be operated during public viewing periods.

Microorganism Safety and Biohazards

17. The following hazardous biological materials may not be displayed at the Toronto Science Fair:

- Radioisotopes or compounds containing radioisotopes at activities above normal background.
- Biological toxins.
- Microorganisms. The use of mixed cultures obtained from the environment (e.g. soils, mouth swabs) is acceptable for experimentation, but not for display.
- Cells or tissues infected with animal or plant viruses.

• No cultures are allowed for exhibition. Photographs or simulated cultures may be used.
• Experimentation involving hazardous materials must be carried out under controlled laboratory conditions and supervision. The name and qualifications of the supervisor should be specified.
• Experimental manipulations of recombinant DNA molecules or animal viruses are prohibited.
• No plant tissue, soil or material which could decompose shall be exhibited.

Animal Experimentation- General

• While student investigations of biological processes are to be encouraged, they are subject to the same laws, ethics, and regulations as any other research. In the Criminal Code of Canada and the Animals for Research Act of Ontario, all vertebrates are afforded protection. Also, schools and science fairs are explicitly included in the definition of 'research facility" in Ontario. The regulations described here, based on CWSF rules, are written in view of these laws. Animal Experimentation –Regulations

Animal Experimentation- Regulations
Animal and Human Experimentation

• Any experiments involving human beings and other vertebrate animals should be passed through the Toronto Science Fair Safety, Animal Care and Ethics Review Committee to ensure compliance with the general regulations and restrictions. If necessary, Toronto Science and Technology Fair will refer the project to appropriate authorities familiar with current regulations and relevant aspects regarding scientific merit, and for guidance and suggestions in performing the work.
• Lower orders of life (bacteria, fungi, protozoa, insects, plants and invertebrate animals) can be used in experimentation to reveal valuable biological information relevant to the higher orders.
• Vertebrate animals (birds, fish, mammals, reptiles, amphibians) are not to be used in any active experiments which may in any way be deleterious to the health, comfort or physical integrity of the animals.
• Observation of wild animals, animals in zoological parks, farm animals and pets is permitted. Observation of wild animals falls within the definition of hunting (or fishing) in some jurisdictions. Students should also obtain advice and permission from conservation authorities to ensure that they are not interfering with the animals' normal lifestyle and well-being, and to ensure that their project is permissible. A permit may be required.
• Behavioral experiments with positive rewards are permissible only if the animal is not placed in a stress situation. Training an animal to travel through a maze to receive a food reward is stressful, particularly if the animal is hungry, and is therefore not permissible. However,

allowing an animal to make a free choice (of food, for example) is permissible, as long as the animal is not stressed before offering the choice (e.g. by withholding food).
- Studies of chick embryos are similarly restricted to observation, without intervention with drugs or other chemicals, or manipulation of physical conditions to test the resiliency of the animal. If eggs are hatched, the chicks must be reared normally. Otherwise all embryos must be destroyed by freezing by the 18th day of incubation.
- Cells and animal parts (including organs, tissues, plasma or serum) purchased or acquired from biological supply houses or research facilities may be used in science fair projects, but should not be displayed at the fair. Evidence of the source of the materials (e.g., bill of sale) must be available at the display. The acquisition of animal parts should involve either the services of biological supply houses or research facilities, or involve salvage from other sources. Salvage from found carcasses (e.g., roadkills) is discouraged due to serious health risks and other constraints.
    - If the acquisition involves salvage from a research project, where the animal has been killed for other legitimate purposes in a legal and humane manner, then the disposition to the science fair project must be part of the original research proposal, and such disposition must have been approved by the Research Committee or the Animal Care Committee of the institution involved. Reference to the original project should be made on the science project display.
    - If the acquisition involves salvage from the food industry, then the source must be acknowledged.
    - If the acquisition involves hunting, fishing or trapping, then those activities must be done in accordance with prevailing regulations, and precautions must be taken to ensure the safety of the student(s). The taking of animals other than for food, without explicit approval, can constitute cruelty. Permits for research are available from conservation authorities, and should be displayed at the project.

- Research involving human beings must involve the principles of informed consent. No human tissues or fluids are to be exhibited in a science fair project due to the associated ethics and possible health hazards. A proposal for an "experiment" of any kind involving humans must be submitted through the Toronto Science Fair Safety, Animal Care and Ethics Policy Committee for advice from competent authorities and to ensure compliance with all applicable regulations and restrictions.

Display of animals and animal parts

- Students working on biological projects may involve animals as outlined above. The display of any biological project is to be a report of completed work. Live microorganisms and vertebrate or nonvertebrate animals shall not be included in the display, although appropriate photographs may be available in the report.
- The only parts of vertebrate animals that may be displayed are those that are either naturally shed by an animal or parts properly prepared and preserved. Soft tissue specimens are not acceptable if they are preserved in formaldehyde, a dangerous chemical excluded under the chemical safety section of these guidelines. Sealed tissue samples on microscope slides are permissible. Thus, porcupine quills (safely contained), shed snake skin, feathers, tanned pelts and hides, antlers, hair samples, skeletons and skeletal parts are permissible, while organ and tissue samples are not. However, photos, videos or slides of organ and tissue samples may be available for viewing upon request, but may not be obviously displayed.
- Biological experimentation is subject to legal restrictions including, among others:
    - Criminal Code of Canada, Section 446, Cruelty to Animals;

- Convention for International Trade on Endangered Species;
- Canadian Wildlife Service;
- Health of Animals Act, Bill C-66 Guidelines of the Canadian Council on Animal Care;
- Animals for Research Act (Ontario).

18. Tamil Cultural and Academic Society Science Fair winners will be notified through phone in a week after the competition. The award ceremony will be held in August, 2012.

19. Exhibits will be divided into the following divisions and categories:

DIVISION	GRADE	CATEGORIES			
Primary	3-4	Physical Sciences	Biological Sciences		
Elementary	5-6	Physical Sciences	Biological Sciences	Engineering Sciences	Computer Sciences
Junior	7-8	Physical Sciences	Biological Sciences	Engineering Sciences	Computer Sciences
Intermediate	9-10	Physical Sciences	Biological Sciences	Engineering Sciences	Computer Sciences
Senior	11-12	Physical Sciences	Biological Sciences	Engineering Sciences	Computer Sciences