Thames Valley Science and Engineering Fair

Date: Saturday 6 April 2019
Time: Judges: 8:45 am - Gymnasium

Place: Faculty of Education Building Gymnasium

Not Covered in this Workshop

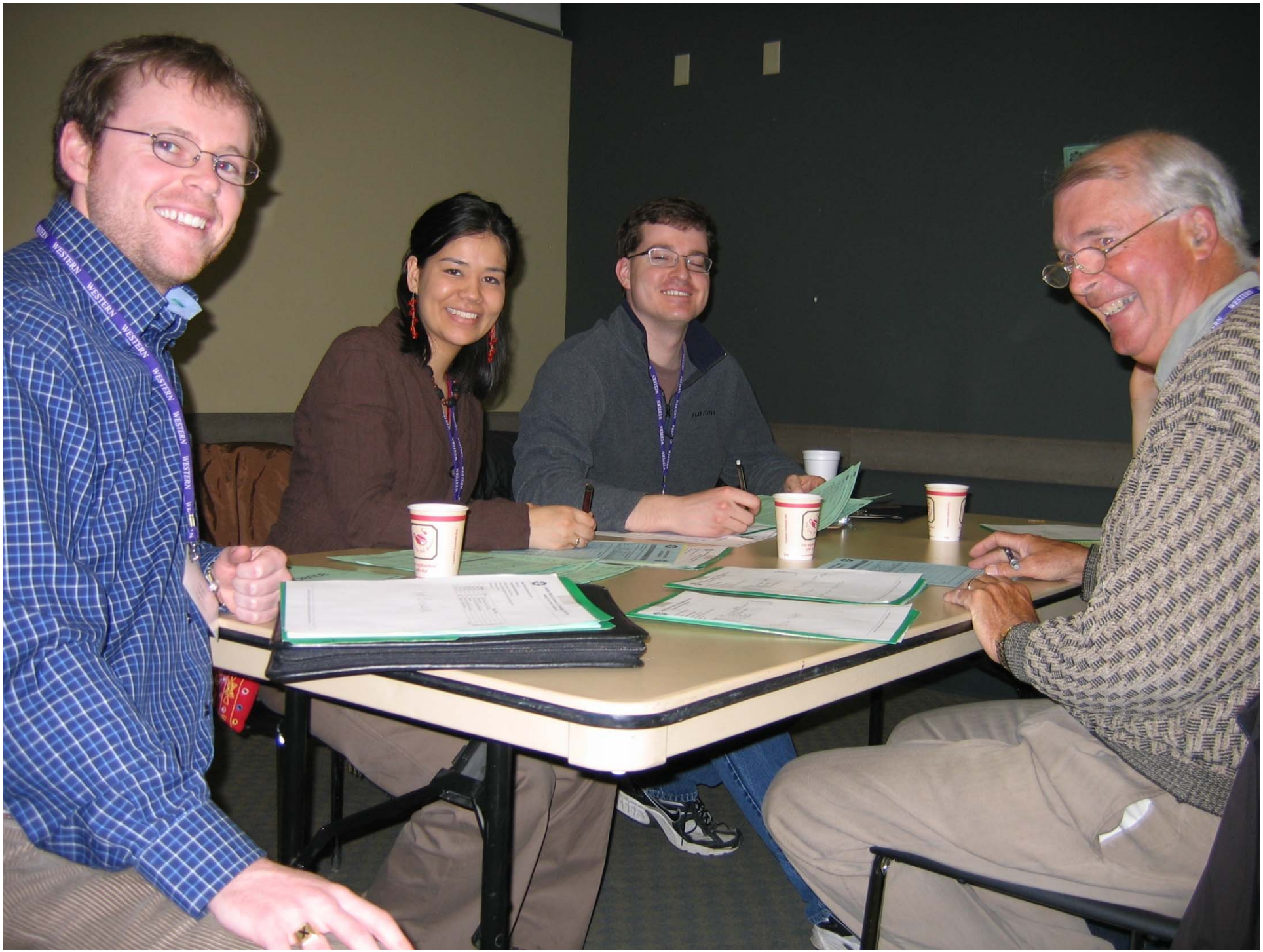
Elementary Exhibition

- Date: Friday 5 April 2017
- Time: 6:00 – 8:30 pm.

This Presentation does NOT cover the judging of these projects.

Organizing the Judging


STARCH GELATINIZATION
CardioStyle


WESTERN

Bring With You

- Smiles
- A Generous Attitude
- Two pencils
- A clip board
- An eraser

We Provide

- Parking
- Coffee
- Snacks
- Lunch via a $10 Western Meal Card
- The cafeteria in FEB has been closed permanently.

Your Reward

- Meet some outstanding exhibitors.
- Meet some new colleagues
- Learn something at each exhibit.
- Give back to the community.

Before The Fair

- Read this presentation.
- Be sure you know if you are judging
  - Gold, Silver and Bronze Medals
  - Special Awards.
- Visit the Judging web site:
  - http://tvsef.ca/
    - Explore all the links in the Judging menu

Projects 2019

Division	Life	Physical	Engineering	Elementary Exhibit	Total
Elementary				43	43
Junior	44	34	27		105
Intermediate	8	5	4		17
Senior	18	12	10		40
Total	70	51	41	43	205

Students Exhibition - Friday: 55
Students Competition - Saturday: 252

Division Heads

Chief Judge	Patrick Whippey
Junior Life Sciences	Delfina Siroen
Intermediate & Senior Life Sciences	Susan Koval
Junior Physical Science	Caroline Whippey
Intermediate & Senior Physical Sciences	John Dickinson
Junior Engineering	Jeff Regan
Intermediate & Senior Engineering	John Dickinson
Developmentally Educated	Susan Lindsay
Elementary Exhibition	Susan Lindsay

Divisional Judging

Organization

Divisional Judging

- Engineering
- Life Sciences
- Physical Sciences

Age Categories

Category	School Grades
Elementary	4 – 5 non-competitive
Junior	6, 7, 8
Intermediate	9, 10
Senior	11, 12

Three Types of Projects

Experiment

Undertake an investigation to test a scientific hypothesis by the experimental method. At least one independent variable is manipulated; other variables are controlled.

Innovation

Develop and evaluate new devices, models, theorems, physical theories, techniques, or methods in technology, engineering, computing, natural science, or social science.

Three Types of Projects

Study

Analysis of, and possibly collections of, data using accepted methodologies from the natural, social, biological, or health sciences. Includes studies involving human subjects, biology field studies, data mining, observation and pattern recognition in physical and/or socio-behavioural data.

Awards

In each Division and Category
Gold, Silver and Bronze Medals

	Life Science	Physical Science	Engineering
Junior	Yes	Yes	Yes
Intermediate	Yes	Yes	Yes
Senior	Yes	Yes	Yes

Medals

In each Division and Category
Gold, Silver and Bronze Medals
Cash Awards

	Gold – 8%	Silver – 16%	Bronze – 24%
Junior	Gold Medal $40	Silver Medal $20	Bronze Medal
Intermediate	Gold Medal $50	Silver Medal $ 25	Bronze Medal
Senior	Gold Medal $100	Silver Medal $50	Bronze Medal

Medals

50 projects in Junior Life.

Award about 0.08 * 50 = 4 Gold Medals.
Award about 0.16 * 50 = 8 Silver Medals
Award about 0.24 * 50 = 12 Bronze Medals

6 projects in Senior Engineering. 3 are outstanding.
Award 3 Gold Medals.

4 projects in Intermediate Physics . All are of lower quality.
One Gold, one Silver and one Bronze Medal will be awarded regardless of standard.

Special Awards

Awards donated by organizations or individuals.

- Western Fair Award
  Best agriculture related projects.

Special Awards Chair: Spencer Seiler

Special Awards 1

Award	Category
Barfett Family Award for Social Science	Open Grades 6 - 12
Beckett Smith Memorial Bit-by-Bit Camp	Junior Grades 6 - 8
Brescia University Entrance Scholarship	Senior Grades 11-12
Conservation Award	Junior Grades 6 - 8
Discovery Western Summer Camp	Junior Grades 6 - 8
Engineers Choice Award	Open Grades 6 - 12
Faculty of Education Award	Open Grades 6 - 12
IEEE London Section Award	Open Grades 6 - 12
Internet of Things	Open Grades 6 - 12
London Public Library Award	Junior Grades 6 - 8
London Regional Children's Museum Award	Junior Grades 6 - 8
Mohammed Sawan Award for Innovation	Open Grades 6 - 12

Special Awards 2

Award	Category
Partners in Research Award	Open Grades 6 - 12
Planetary Science and Space Exploration Award	Junior Grades 6 - 8
Research Western Imagination Prize - Junior	Junior Grades 6 - 8
Research Western Imagination Prize – Intermediate	Intermediate Grades 9 - 10
Research Western Imagination Prize – Senior	Senior Grades 11 - 12
Rotary Literacy Award	Junior Grades 6 - 8
Ted Rogers Innovation Award	Open Grades 6 - 12
University of Ottawa Scholarship	Senior Grades 11 - 12
Western Engineering Summer Academy	Int & Senior Grades 9 - 12
Western Fair Award	Open Grades 6 - 12

Special Awards

Special Awards Chair: Spencer Seiler

- A team of Judges will be assigned to each Special Award.
- Read the Criteria for the Award.
- Junior Awards must go to Junior Projects.
- The results are to be given to the Special Awards Chair.

Special Award Timetable

8:45	Pick up folders in Auditorium
9:00	Final Instructions
9:30 – 11:30	Judging
11:30 – 12:30	Meet in 2025 to review results and select winners.

And The Winner Is

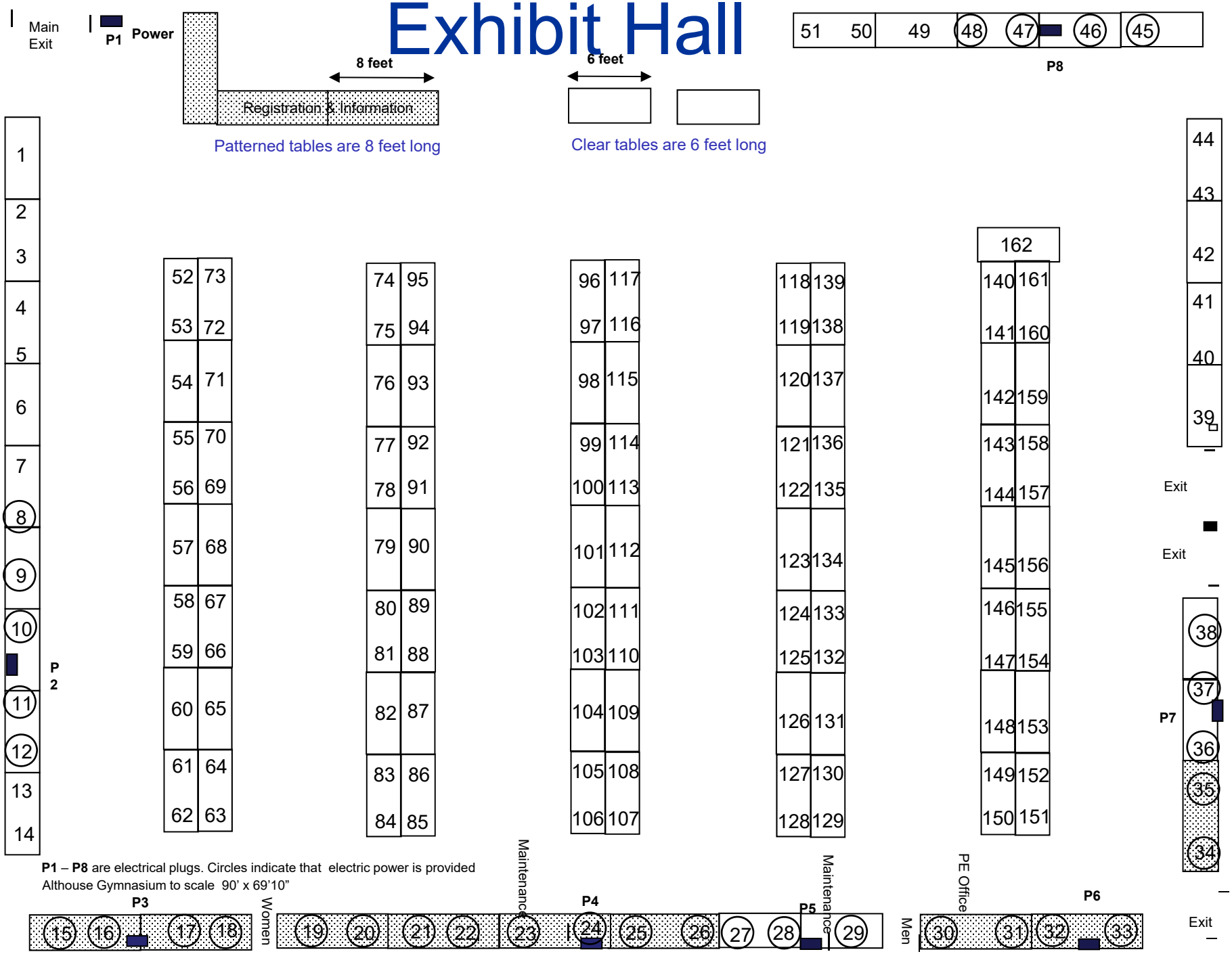
Funding

Cost to run the Regional Fair:	15 000
Cost to send 10 students + 2 delegates to the CWSF:	22 000
Funds raised for 2019	35 000
Shortfall:	2 000

If you work for a company, please consider asking for support as part of their community outreach program.

Judging the Projects

Exhibit Hall



Gareth and Darcy won the Discovery Western and a People's Choice award

Qualifications for a Judge

- Previous Judging Experience
  - Not required - we will train you via this workshop.
  - Post Secondary Education
  - Science
  - Engineering
- Experience in evaluating exhibitor work
  - Teacher, Teaching Assistant, Professor.
  - Senior Undergraduates
- Bilingual Judges are particularly welcome.
- No Backboards will be presented in French.

Facilitator

- Introduce yourself.
  - Where you come from, what you do.
- Ask the exhibitor to introduce herself.
- Listen respectfully to the presentation.
- Ask graded questions
- stop when the limit of knowledge is reached.
- Find two things to praise.
- Give a full 15 minute interview.

Motivator

- Focus on the exhibitors.
- Ask questions in an upbeat tone.
- Listen intently.
- Give lots of encouragement.
  - I liked …
  - I enjoyed …
- Thank them for sharing their project with you.

Role Model

- You are
  - Judge
  - Scientist
  - Educational Leader
  - Business Leader
- You represent all of these aspects.
- Let the exhibitors say

  That was a fantastic judging experience

Counselor

- Be Empathetic.
- Celebrate the work done, even if it is modest.

Evaluation Components

Item	Max Score %
Scientific Thought	45
Original Creativity	25
Communication Interview Display Log book if any	30

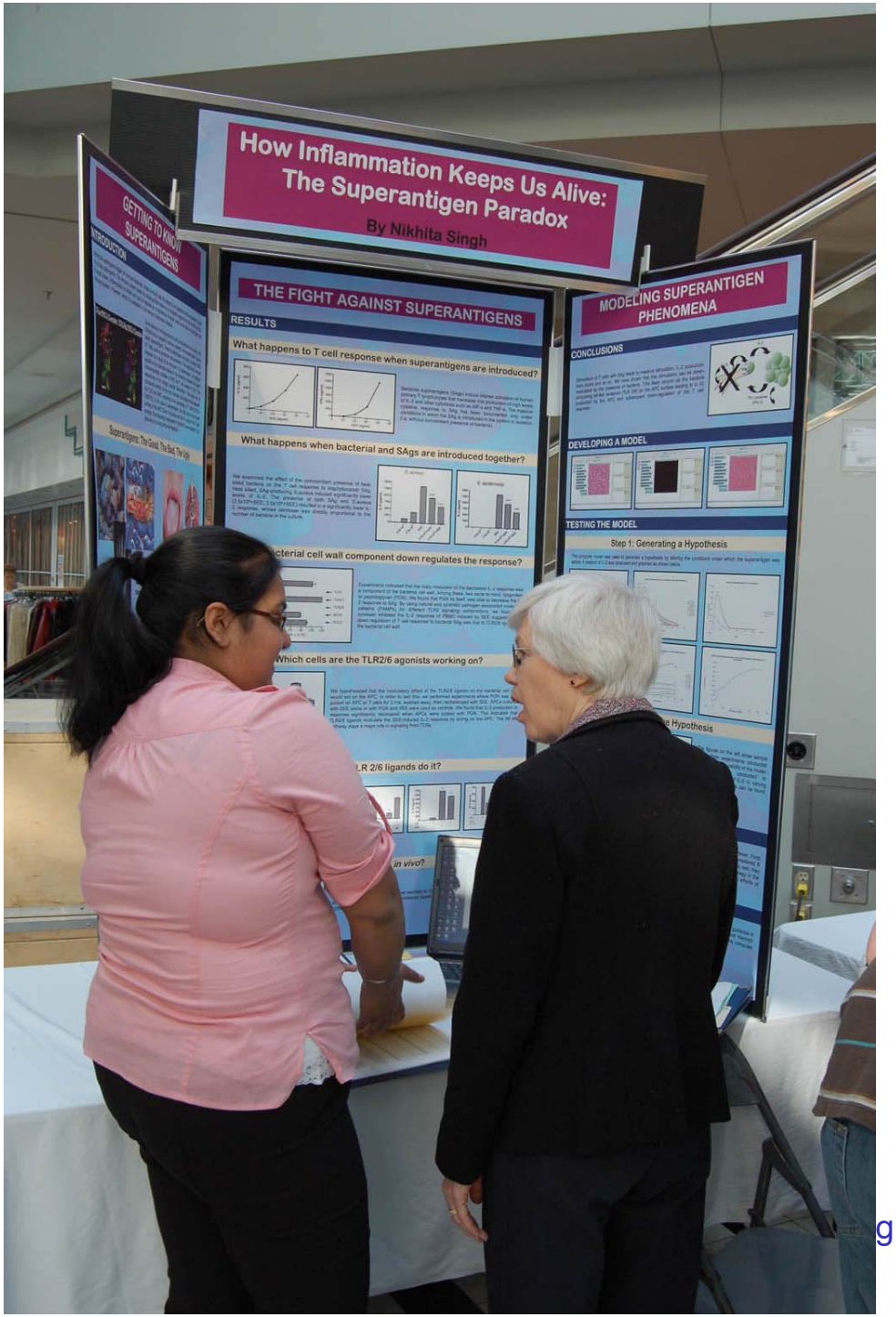
Judges must not…

- Tell a student “You will win an award.”
- Convey by body language or otherwise a sense of dismay.
- Discuss their opinions in public areas.
- Treat this as a university examination.
- Judge an exhibit beyond their level of expertise. Contact the Division Chief for help.
- Discuss your experience outside the judging room.

Elementary School Students

Grades 6 - 8

- Most judges will see only elementary school students.
- One of them may be turn into one of the best young scientists in Canada.
- The three rules:
  - Encourage
  - Encourage
  - Encourage
- Many will be studies, not experiments.



Divisional Judging

Divisional Judging

- The Divisional Judging should be a highlight of the Fair for exhibitors.
- Each team of 3 (Junior) or 4 (Int, & Senior) judges evaluates 6 projects
- Judges work alone - mostly
- Projects will be judged 3 or 4 times
- Interviews will last 15 minutes.
- Judges will bring:
  - empathy, experience, erudition, expertise.
- Final decision is made by consensus.
- Revisit project(s), if necessary

Divisional Timetable

8:45	Pick up folders in Auditorium
9:00	Final Instructions
9:30 – 11:30	Judging
11:30 – 12:30	Discus in groups of 3 or 4. Pick your Gold, Silver & Bronze projects. Write these on the board. Discussion by all.
1:00 pm	Results should be decided by 1:00 pm
1:15 pm	Final results given to Chief Judge.
1:30 – 4:00	Grand Awards Committee selects those going to CWSF

Break Out Rooms

Faculty of Education Building

Chief Judge	2021
Junior Life Science	2015
Junior Physical Science	2017
Junior Engineering	2023
Special Awards	2025
Intermediate & Senior Physical Science & Engineering	2027
Intermediate & Senior Life Science	2029

Each Judge

- Visits each exhibit for 15 minutes.
  - Additional 5 minutes to record results.
- Judges six exhibits typically.
- Uses judging form to score your exhibits. Uses the scores to decide if A is better than B.
- Use rankings only in the final decisions.
- Round 1 Judging from 9:30 am – 11:30 am.

It is hard to stick to time, but you MUST

Part A Scientific Thought 45%			
Experiment	**Innovation**	**Study**	**Mark**
Level 1 (Low) Mark Range 6 - 15			
Replicate a known experiment to confirm previous findings	Build a model or device to duplicate existing technology or to demonstrate a well-known physical theory or social/behavioural intervention.	Existing published material is presented, unaccompanied by any analysis.	6 7 8 9 10 11 12 13 14 15
Level 2 (Fair) Mark Range 16 to 25			
Extend a known experiment with modest improvements to the procedures, data gathering and possible applications.	Improve or demonstrate new applications for existing technological systems, social or behavioural interventions, existing physical theories or equipment, and justify them.	Existing published material is presented, accompanied by some modest analysis and/or a rudimentary study is undertaken that yields limited data that cannot support an analysis leading to meaningful results.	16 17 18 19 20 21 22 23 24 25
Level 3 (Good) Mark Range 25 to 35			
Devise and carry out an original experiment. Identify the significant variables and attempt to control them. Analyse the results using appropriate arithmetic, graphical or statistical methods.	Design and build innovative technology; or provide adaptations to existing technology or to social or behavioural interventions; extend or create new physical theory. Human benefit, advancement of knowledge, and/or economic applications should be evident.	The study is based on systematic observations and a literature search. Appropriate analysis of some significant variable(s) is included, using arithmetic, statistical, or graphical methods. Qualitative and/or mixed methods study should include a detailed description of the procedures and/or techniques applied to gather and/or analyse the data (e.g. interviewing, observational fieldwork, constant comparative method, content analysis).	26 27 28 29 30 31 32 33 34 35
Level 4 (Excellent) Mark Range 36 to 45			
Devise and carry out original experimental research in which most significant variables are identified and controlled. The data analysis is thorough and complete.	Integrate several technologies, inventions, social/behavioural interventions or design and construct an innovative application that will have human and/or commercial benefit.	The study correlates information from a variety of peer-reviewed publications and from systematic observations, and reveals significant new information, or original solutions to problems. Same criteria for analysis of significant variables and/or description of procedures/techniques as for Level 3.	36 37 38 39 40 41 42 43 44 45

Part B: Original Creativity 25%			
Rank 1 (Low) Mark Range 6 to 10	Rank 2 (Fair) Mark Range 11 to 15	Rank 3 (Good) Mark Range 16 to 20	Rank 4 (Excellent) Mark Range 21 to 25
The project design is simple with little evidence of student imagination. It can be found in books or magazines	The project design is simple with evidence of student imagination. It uses common resources or equipment. The topic is a current or common one.	This imaginative project makes creative use of the available resources. It is well thought out, and some aspects are above average.	This highly original project demonstrates a novel approach. It shows resourcefulness and creativity in the design, use of equipment, construction and/or the analysis.
6 7 8 9 10	11 12 13 14 15	16 17 18 19 20	21 22 23 24 25

PROJECT EVALUATION SUMMARY

		MAX	MARK
PART A	Scientific Thought (from page 1)	45	
PART B	Original Creativity (from page 1)	25	
PART C	Communication, based on the interview, the backboard and the project log, if any.	30	

TOTAL MARK AWARDED TO THIS PROJECT	

Ranking the Projects - 1

- Most challenging part of the task
- Groups of 3 or 4 judges evaluate 6 projects (usually)
- Have each of the judges rank it from 1 to 6
- Add the rankings. Low score is best.
- Discuss until you reach consensus.
- Recommend a Medal for each project:
  - Gold, Silver, Bronze, None
- Write your final recommendations on the board

Ranking the Projects - 2

Judge	Project Numbers					
	15	18	36	42	45	60
Alfred	1	4	3	5	6	2
Betty	3	2	6	4	5	1
Charles	2	3	5	3	6	1
Daphne	6	4	5	3	1	2
Total	12	13	19	15	18	6
Medal	B	B				G

Gold Silver Bronze

Division Awards Final Results

Rank	Project Number Numéro du projet	Title (Abbreviated) / Titre (abbrévié)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

Fill in all the columns!!

Sample Questions: Intermediates and Seniors

- Why did you decide to study this topic?
- What are your controlled variables?
- How accurate are your readings?
- What future applications can you see from the results of this project?
- What one outstanding thing did you learn doing this project?
- How would you improve this project if you would do it again?
- Did you have a mentor?

Sample Questions - Specific

- What is the wavelength of your laser?
- What is an “elastic” collision?
- What is the chemical formula for glycerin?
- What is chlorophyll?
- What is diffraction?
- Why is the Greenhouse Effect so called?

Cultural Sensitivity

- In Muslim communities, it is not appropriate for girls to shake hands with men, and vice versa.

- Let the student guide you in appropriate ways of greeting.

Coaching

- Coaching is encouraged during judging. If a student does not know kinetic energy, explain.
- BUT
- Keep good notes of the coaching you do, so you can describe the information you gave during your discussion of your rankings.

Feedback

- We will not be giving either written or verbal feedback after judging is over.
- Because:
- It is not possible to provide consistent and high quality feedback to students.
- Feedback is not given at the Canada Wide Science Fair.

Special Awards - 1

Special Awards Chair: Spencer Seiler

- A team of Judges will be assigned to each Special Award.
- The results are to be given to the Special Awards Chair as soon as they are available.

Special Awards - 2

Before The Fair

- Look up the criteria for your award
  http://tvsef.ca/?page_id=4465#special
- Scan the Project Summaries, and make a short list of projects to interview.
  http://tvsef.ca/?page_id=34

Special Awards - 3

- Do a scan of titles & quick walk round to select projects for an interview.
- Judge each exhibit for 8-10 minutes max.
- Revisit the projects on your short list, if necessary.
- Interleave with the Divisional judges who have interviews at specific times.

Report your Special Award Results

- Fill in your winners plus a further two choices
- Give in full:
  - Exhibit Number
  - Name(s) of exhibitors
  - Exhibit Title.
- The Judge(s) signs the report.
- Give it to the Special Awards Chair.

Spread the Wealth

- It is the Policy of the TVSEF to Spread The Wealth, and limit the number of awards given to one project. Thus the Chief Judge reserves the right to give an award to your second choice should one project end up with multiple awards.

- Example: The winner of a trip to the CWSF would not usually also be awarded the London Children's Museum award.

Special Awards Final Results

Sponsor:
Criteria:
Award:

Please list in order of merit the winner(s) plus two additional projects.

Results			
	Name	**Exhibit Number**	**Project Title**
1			
2			
3			
4			
5			

FAQ 1

- We don’t think a Gold Meal should be awarded

Response

- Awarding at least one Gold Medal, one Silver and one Bronze Medal is mandatory.

FAQ - 2

- Can I give a Senior Special Award to an outstanding Intermediate Student?

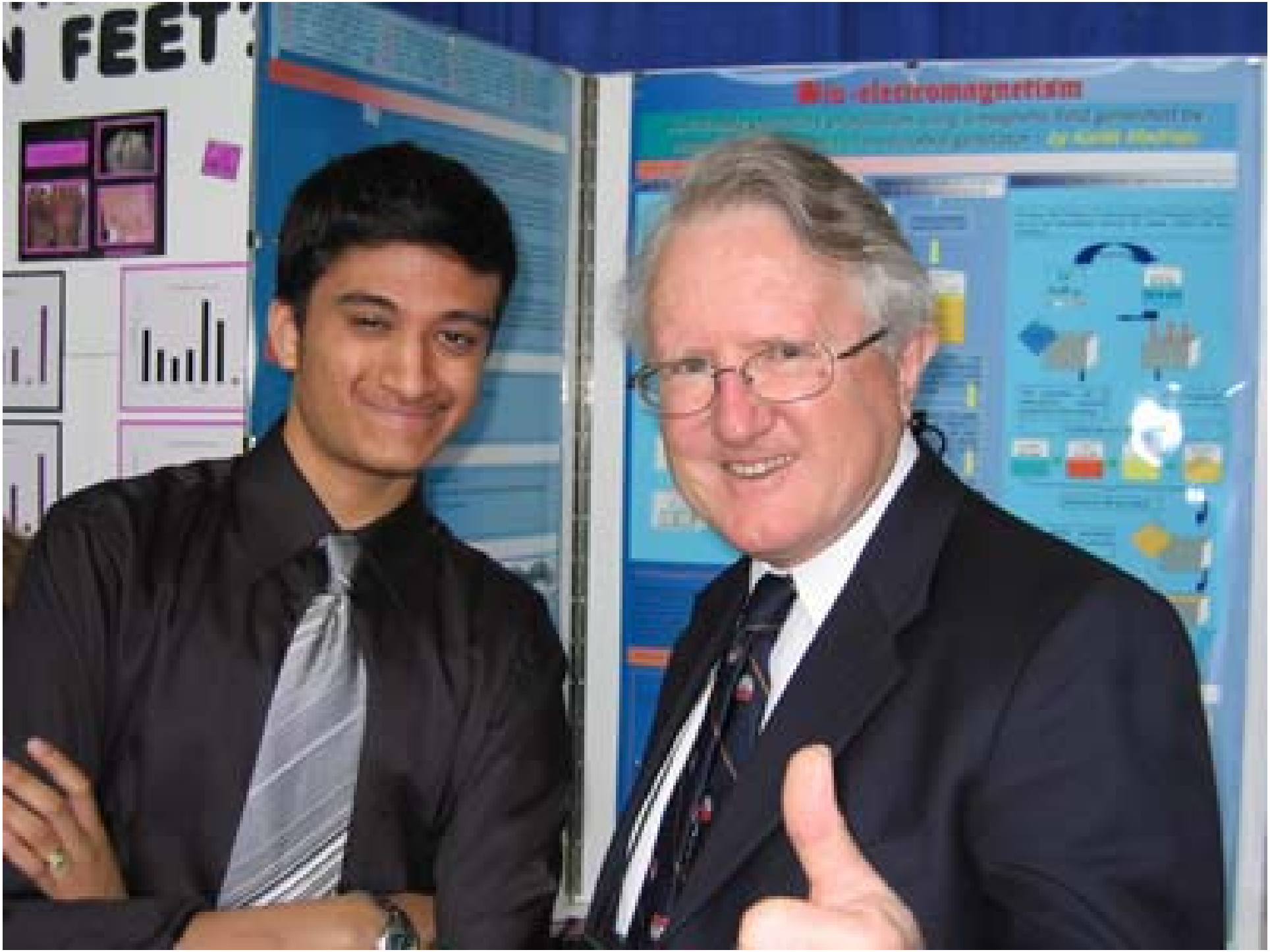
Response

- No.
- Each award's sponsor provides particular criteria so the award is only open eligible projects.

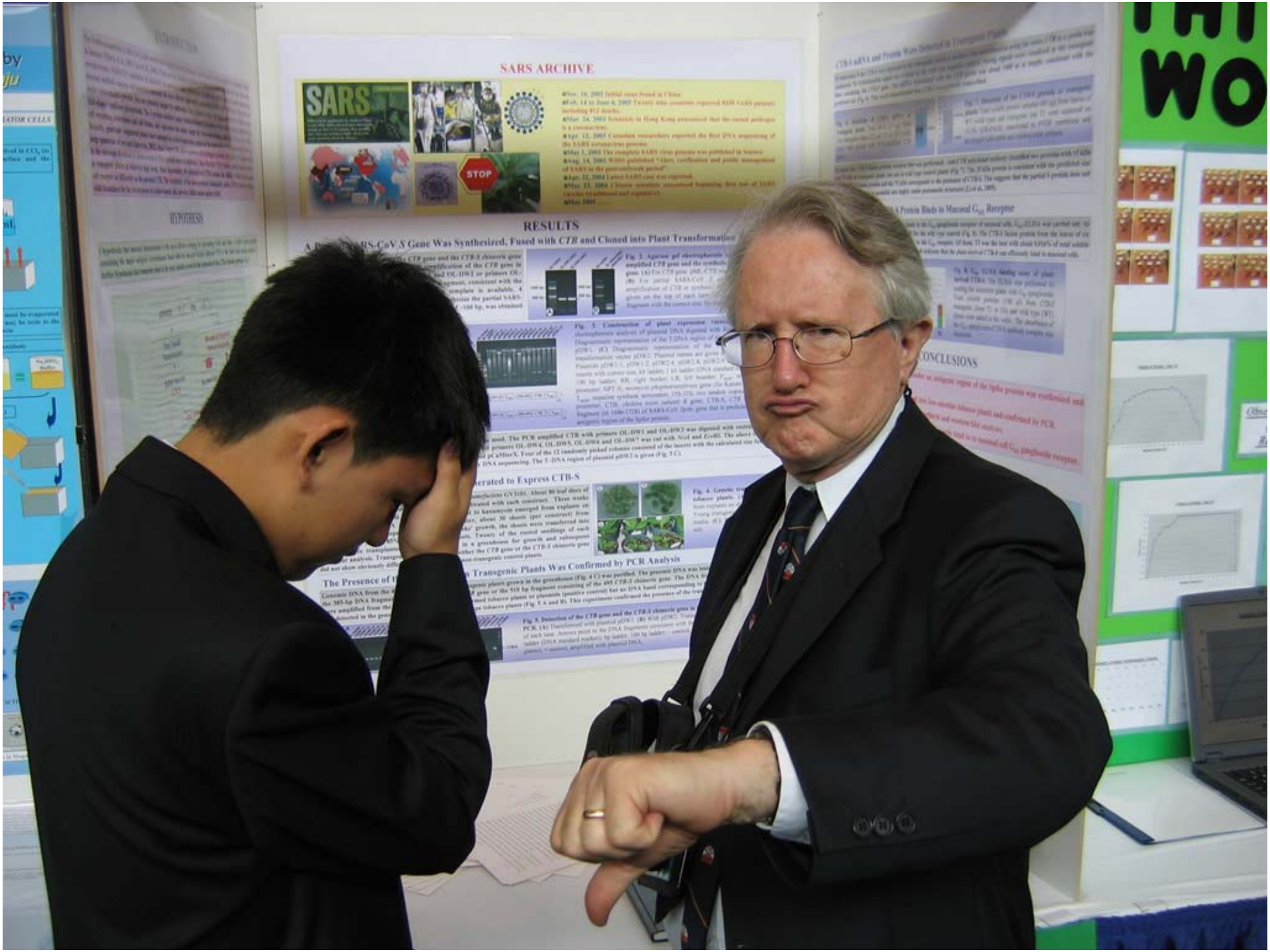
Body Language

- The following slides show various ways a judge might convey non-verbal information.

- Which is the most appropriate?


FEET
electromagnetism

OOPS 1


SARS ARCHIVE
SARS
STOP
RESULTS
CONCLUSIONS

OOPS 2

OOPS 3

Cerebral Palsy

One judge was so “appalled” that the student used “retarded” in the presentation, he gave him a 6.

I was quite shocked as to how unprofessional their judging comments were and how hard they were on the students.

I did not write down this judge’s comments in the amalgamated feedback form as his comments were cruel and would have crushed a little child’s spirit.

I have children that are just beginning school and I would never let them enter a competition that so unfairly judges them

Be aware of your own biases

Some details have been changed to preserve anonymity

Best

Body Language

Which do you Prefer?

Contacting a participant after the Fair

If you wish to contact a student after the Fair, for example to offer extra advice or research support, you must contact the Chief Judge who will initiate contact on your behalf

Judges may not contact school students directly, outside their role as judge.

Acknowledgements

We wish to thank these participants who have allowed elements of their superb science fair projects to be used in this workshop.

- Kartic Madiraju - Montreal
- David Wang – London