CANADIAN BIOLOGY OLYMPIAD 2018

The 2018 Canadian Biology Olympiad/Les Olympiades Canadiennes de Biologie (CBO/OCB) is a nation-wide organization involved in the selection of four secondary school students talented in the field of biological sciences to represent Canada at the International Biology Olympiad. Students will be selected on the basis of a two round competition process (see below). The top four performing students in the CBO/OCB competition are invited to represent Canada at the 29th annual International Biology Olympiad (IBO) to be held in Tehran, Iran in July 2018.

A) **Who can participate in the CBO/OCB competition?**

- Competitors must be residents of Canada and Canadian Citizens or Landed Immigrants.
- Competitors are students of a regular secondary school for general education in Canada. In Quebec, first year CGEP students are also eligible to participate.
- Competitors have not obtained a diploma allowing them to study at a university or equivalent institution, before the 1st of January 2018.
- Competitors have not yet started study at a university or equivalent institution as regular or full time students.
- Competitors must be under the age of 20 as of July 1st, 2018.
- Competitors have not already participated in the IBO (can only participate once).

B) **Selection of the national team and participation in the IBO**

In addition to the rules stated above:

- Competitors cannot compete in another International Olympiad in the same year they are participating in the IBO.
- No school can have more than 2 members on the CBO team
- At least 2 provinces should be represented.

Note from the host country:

Dress code:
Ladies and female contestants are cordially requested to observe local dressing code as to cover their head with a headscarf and wear loose-fitting long clothing. It is also recommended that men avoid wearing shorts in public.

C) **The National Competition**

The CBO/OCB competition is a two round contest. Round one is the submission of a Skills Portfolio to test your lab skills (see details below). The second round is the University of Toronto National Biology Competition to test your theoretical skills.

(http://www.biocomp.utoronto.ca/about). Please ensure you have your school registered for the University of Toronto Competition.

Final placing is based equally on the results from the Skills Portfolio and the University of Toronto competition.

The four selected students will be required to attend the CBO National Training Camp taking place a week before the international competition. The camp provides a unique experience for students to work alongside professionals in a variety of biology fields and develop laboratory skills through intensive hands-on activities. Please note that the camp is also open to other young biology enthusiasts who will train alongside the four selected students (check the National Training Camp tab on the web site for more information).

Important dates:

- The laboratory portfolio is due by April 18th, 2018.
- The University of Toronto Biology Competition exam is on April 26th, 2018.
- The National Skills Training Camp will be held from July 8th to 12th, 2018 (details will be posted on the website).
- The IBO will be held in Tehran, Iran from July 15rd to 22nd, 2018.

Cost:

The cost for participating at the National Skills Training Camp and the IBO is of $3,300. Please note that bursary may be available to help finance the IBO portion of the cost (~ $2,500).

LABORATORY SKILLS PORTFOLIO: CBO2018

To be considered for the finals in the Canadian Biology Olympiad and National Team Selection, one must submit this Laboratory Skills Portfolio on or before **Wednesday April 18, 2018** in digital format (flash drive to the address below). It is suggested that all students participating in the Canadian Biology Olympiad consider performing the experiments multiple times prior to completing the requirements for evaluation. Completing the tasks will improve laboratory skills for future studies in biology, even if you are not successful in being selected for the team.

The skills portfolio is designed to select candidates best suited to compete at the International Biology Olympiad. The IBO is more than just a knowledge competition; competitors must possess lab skills, and ability to work under pressure. It is expected by creating this portfolio students will demonstrate exemplary laboratory skills, and ability to complete tasks within set parameters.

All work presented is to be yours, and the skills performed must have been completed during the past year of study. A teacher (supervisor if completed off school campus—in the case that you are working in a college or university setting, or other school) must sign for authenticity and original work—see forms below. NOTE: the supervisor of your work **cannot** be a direct family member.

The portfolio is presented in advance so work on skills and development represents the student's true abilities and strengths. Please ensure the completed portfolio is received by the CBO on or before 23:59 April 18, 2018—in ONE package. If is advised to submit all work and forms on a single thumb drive in properly labeled files and folders. Files should be in pdf format and videos should be in mp4 format. If the documents are blank or cannot be read, there will be no contact to resubmit. So, please check that the files can be opened on a computer other than your own. Any portfolios arriving after 23:59 on April 18 will not be accepted—no extensions (this includes all student documents). Letters of reference from a teacher may arrive late, if the teacher has sent an electronic request prior to the deadline. Please note that the flash drive will not be returned.

Note: A French translation of the Skills Portfolio is available upon request but the U of T exam is only available in English.

Submission of the Portfolio:

You may perform tests/labs as often as you wish (to work on technique and mastery), but only one lab sample is to be submitted for each category. Please remember, at the International Biology Olympiad you will be expected to be able to complete a multitude of lab exercises independently under pressure and time constraints, so it is in your best interests to work on laboratory skills and be proficient in these. Note, the labs here are not necessarily the same labs you will encounter at the International Biology Olympiad—the IBO labs remain unknown until the competition begins.

The entire Skills Portfolio MUST be submitted to:

Dr. Sylvie Bardin
Canadian Biology Olympiad
UOIT Faculty of Science
2000 Simcoe Street North
Oshawa, ON, L1H 7K4

If you require clarification regarding the portfolio, please do not hesitate to ask.
Questions are to be directed to: admin@canadianbiologyolympiad.ca

Remember: The Lab Skills portfolio must be received on or before
April 18, 2018

The Portfolio must contain:

1. Personal Profile: This is NOT part of the evaluation for the Canadian Biology Olympiad, but will describe you as the participant!

2. Teacher Reference: each candidate must submit a confidential teacher reference. Please ensure this letter is sealed in an envelope, with the teacher signature across the seal. Teachers are to include the following information in the reference letter:

a. In terms of Biology knowledge and skills, how would you rate this individual?

b. In terms of maturity for international travel and ambassador for Canada, can you cite any examples of this student's ability to be a role model at an international venue?

c. Do you have any concerns about this student, such as social behaviours or other issues? Would you travel with the student on an international expedition? Why or why not?

3. Completed Activity for EACH category below (36 marks):

Category A: **Dissection**

Category B: **Plant Biology**

Category C: **Biochemistry**

Category A: Animal Structure and Function: Insect Dissection (12 marks)

Objective:
• You will have to characterize both external and internal structures after dissection of a locust/grasshopper.

Skills to demonstrate:
• Ability to effectively dissect a specimen in the time allotted.
• Ability to dissect out and show correct physiological details within the locust
• Here are the details that must be included in your photo-essay:

EXTERNAL FEATURES:
• Spiracles
• Dissected out and labelled parts of a jumping leg
• Dissected out and labelled parts of the Mouth

INTERNAL FEATURES:
• Malpighian tubules
• Crop
• Esophagus
• Ventral Nerve Cord

What must be submitted:

1. A maximum 10 minute uninterrupted video demonstrating your ability to dissect the details outlined above. You can take photos AFTER the video, but all dissection must be finished and completed in the 10 minutes allotted. Photos are to show your final product and NO additional dissection is permitted for photographs! You MUST be supervised by the person signing the lab cover sheet.

2. A Photo-essay (digital is fine) that demonstrates and shows labelled structures of the structures noted above. (NOTE: you may use a dissecting microscope to take photos, but NO additional dissecting is permitted to make a better picture! Any items dissected out for photographing must be out and set in the 10 min video allotment. The photos MUST be of YOUR dissected specimen from the video submitted.

3. Lab Cover sheet.

Category B: Plant Anatomy and Physiology Lab (12 marks)

Objective:

Part 1: Demonstrating through slide preparation and a photo-essay the overall microscopic structural differences between a xerophyte and a hydrophyte.

Part 2: Create a lab that measures the differences in stomata densities between different leaves, where a variable has been changed—to determine if there are differences. You must determine the question to be asked, decide upon a method, provide statistically analyzed data, and a discussion interpreting your results. References are expected.

Skills to demonstrate:
• Proper sectioning techniques to demonstrate microscopic sections to show different features of the different plants
• Proper techniques for observing stomata
• Proper display of stomata results, and an effective use of statistics to demonstrate results as conclusive results.
• Ability to come up with a proper procedure to evaluate a question regarding the stomatal densities.

What must be submitted:

1. Cover Page for the activity.

2. Photo-essay (can be digital): this photo essay is to include LABELLED photographs, demonstrating the microscopic differences between your sections of the xerophyte and hydrophyte structures. These photos are to be of YOUR completed sections and your ability to use a microscope! There is to be some text that explains how the differences account for the plants success in that environment.

3. A maximum 5 minute video demonstrating your ability to hand section, for preparation of your slides.

4. A maximum 2-page written report outlining the Stomata question posed for part two, the procedure, statistical analysis completed, and a written discussion that interprets your results.

5. You need to provide a couple of photos of YOUR prepared stomata slides that YOU made for the lab so that analysis of your results can be obtained.

Category C: The Hill Reaction (12 marks)

Objective:

Re-create the Hill reaction lab that demonstrates how photosynthesis requires light using a colorimetric evaluation of the results

Skills to Demonstrate:

- Ability to quantify differences in concentrations using a spectrophotometer or other methods.
- Ability to graphically represent and interpret your data.
- Effectively communicate through graph and text the outcome of your lab exercise.

What must be submitted:

1. Lab Cover Sheet.
2. A one page (maximum) outlining the protocol you used in your experiment.
3. A 5-minute (maximum) video of you completing your experiment. The video should demonstrate your ability to effectively use instruments and equipment. You may pause the recording of your experiment when procedures are being repeated but the video should show the key aspects of the complete procedure. Your video should highlight your technique. You are not allowed to edit the video. If using a Spec20, or equivalent, demonstration of using a blank and how to measure is necessary. The maximum length of the video is 5 minutes.
4. A graphical representation of your results. This graph is to be completed by hand, DO NOT USE a computer for this. NOTE: at the IBO graphs are often completed in a very strict time and must be done correctly by hand!
5. One page (maximum) explaining how the technique used in the experiment was suitable for the quantification.

PERSONAL PROFILE:

(None of this information will be used in determining the ranking at the Canadian Biology Olympiad competition…this is so the organizing committee can get a sense of who you are)

Participant Name:
Home Address:
Home Phone number (evening contact number):
E-mail Address:
School Attending (include City and Province):
Age: Birth date:
Status in Canada (check the appropriate box): Canadian Citizen ☐ Landed Immigrant ☐
Country of your issuing passport:
What would it mean for you to be one of the four selected students to represent Canada at the next IBO?
Do you have any limitations that might prevent you from attending the National Training Camp (in Ontario) from July 8 to July 12, 2018, and the International Biology Olympiad (in Tehran, Iran) from July 15 until July 22, 2018?

Lab Cover Sheet

(print ONE for each submitted lab category—should have 3 in the portfolio—Category A, B and C)

Participant Name:	
School:	
Date Lab Was Completed:	
Lab Skills Category (circle/highlight):	A B C
Species/Organism Used: _____	
Name of videographer:	
List of Materials/stains/solutions/chemicals used (add to back if necessary):	

Teacher/Mentor Agreement

(must be signed by a supervising official—someone to verify that the work is the participant's)

I, _____, the supervising teacher, confirm that the work presented/demonstrated with this cover sheet is _____ (name of student) personal's work. The report submitted represents this person's own writing and understanding. I also certify with my signature that this student completed the requirements as outlined in the objectives of the portfolio assignment.

_____ _____

Signature of Teacher Date

_____ _____

Position Contact Information (phone or email)