



25 years of

International Biology Olympiad





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25 years of IBO

A memory book on the occasion of celebrating 25 years of the International Biology Olympiad

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For information about IBO, including IBO tasks (exam papers): <http://www.ibo-info.org>

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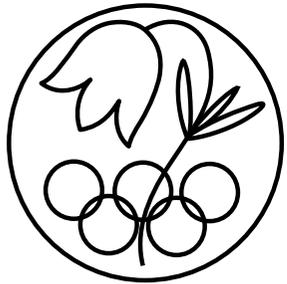
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25 years of

International Biology Olympiad





Preface

This book tells the success story of 25 years International Biology Olympiad (IBO), a competition for talented young secondary education students. It is a one week event, which is held every year in July. In IBO students from different countries are tested on their skills in tackling and solving biological problems. The IBO was founded in 1989, instigated by UNESCO. The first competition was held in Olomouc, Czechoslovakia in July 1990 with participants from only six countries. Now in 2014 we are celebrating the 25th IBO in Indonesia and over 60 countries are expected to participate and bring their very best students to Bali. This jubilee is a wonderful opportunity to celebrate and commemorate the importance of IBO.

Why IBO is so valuable? Here is the answer.

Worldwide we are facing urgent questions like feeding people, sustainable development, and preserving the environment. This is the challenge of the 21st century. In order to find solutions we need knowledge of life sciences and we need talented people. That's exactly what the IBO is all about. It is a fascinating competition for bright

students in solving practical and theoretical problems, requiring biological knowledge, creative thinking and skills.

But IBO not only is just a competition. It also is a meeting place for youngsters with great potential. It promotes friendship among young talents from different countries leading to understanding and cooperation. Participation in IBO stimulates an interest in going for a career in the wonderful and important field of the life sciences.

Moreover, the IBO is an outstanding opportunity to promote exchange of ideas and material about biology and comparing the educational trends and biology syllabi and curricula in different countries.

A lot of information about all these aspects are brought together in this book. So we expect reading and consulting this book will be interesting for all colleagues involved in biology education. Those interested in more details like IBO reports, IBO tests, IBO-Guide and student rankings are invited to consult IBO-website: <http://www.ibo-info.org>.

participants from all corners of the world





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students doing practical tasks





IBO in a nutshell

The International Biology Olympiad (IBO) is a competition for secondary school students. Their skills in tackling biological problems, and dealing with biological experiments are tested. Interest in biology, inventiveness, creativity and perseverance are necessary.

Every participating country sends four students, who are the winners of the respective national competitions. They are to be accompanied by two team leaders as representatives of each country.

In bringing together gifted students, the IBO tries to challenge and stimulate these students to expand their talents and to promote their career as a scientist, so biology talents do not get lost. The Olympiad also is focussing on biology as a beautiful and valuable subject. Many biological topics like

genetics, ethology and ecology are important for society, especially in relation to issues like food production, nature preservation and going for a sustainable global situation.

The Olympiad offers the opportunity to compare the syllabuses and educational trends in biology in different countries. This is useful information to improve biology education on a national level.

Many institutions are involved in the organization of each National Olympiad: Ministry of Education, industry, teachers' associations, universities, and schools.

Contacts between these institutions will lead to a better understanding and communication about their respective activities in the field of biology.



medal winners



problem solving



Welcome to all participants of the 25th IBO!

Welcome to Indonesia, one of the megadiverse countries in the world.

We are very honoured to be given the trust by fellow IBO coordinators to hold the IBO in July 2014. Since given the mandate in November 2012, we have tried our best to make IBO a memorable occasion.

Started as observer in IBO 1999 in Uppsala, Sweden, Indonesia has participated in IBO ever since. For Indonesia, as a country having the 5th largest population in the world, comprising 12 million of high school students, it is not easy to select four outstanding students in biology. Through our National Biology Olympiad, IBO advisors managed to select students from the city level, then the province and lastly national level (National Science Olympiad). Indonesian students have always given their best in the IBO and we are proud of their achievements.

To date, many of the former Indonesian IBO participants have finished their study, many became medical doctors and some became scientist in various fields of biology. Many of them still keep

contact with fellow participants from other countries. As an international youth competition, IBO has proven to be very useful not only for participants but also for biology positioning as an important field for the advancement of humanity. It opens up opportunities for further studies through various friends made during IBOs and also through IBO's recognition by various higher education institutions all over the world.

As the chairman of the 25th IBO, I feel that there should be something special to commemorate 25 years of IBO. During the Advisory Board meeting on the 12th of November 2012, I thought a book would perfectly immortalize the moments throughout the years. I contacted Hans Moréllis and the idea was well received. Work then started on this memory book celebrating the 25 years of IBO. Thank you to all the people who took part in authoring and compiling this memory book, I hope this book will be useful as a memento for all of us.

We would like to express our gratitude to the Minister of Education and Culture of the Republic of Indonesia who has supported Indonesian IBO team from the very beginning, until now as host country. We are also very grateful and would like to congratulate other fellow IBO coordinators that

have brought with them their four best students to the 25th IBO. We hope that this event will be a memorable IBO for all of us. Have fun in Bali, and do not forget to enjoy other parts and aspects of Indonesia.

Happy 25th anniversary of IBO!



*Dr Agus Dana Permana
25th IBO Chairman
Indonesian IBO Coordinator*

Welcome to IBO 2014!

Welcome to the largest archipelago in the tropic!

We are honoured to welcome all friends, guests and participants of the 2014 International Biology Olympiad (IBO). 2014 is a great year for IBO as it is the 25th anniversary of this prestigious international biology competition for secondary school students. In 2012, we had not planned to host IBO until 2020. However, due to some circumstances, Indonesia was offered to host the event for 2014. It was a privilege for us, and we were more than happy to organize the event, especially as the IBO 25th anniversary. The ministry of Education and Culture, Republic of Indonesia, is fully supporting the event, in terms of administrative as well as in financing the event.

Twenty-five years is not a short time, it can be considered as a long history of friendship and hard work. At this moment we would like to honour all the people and parties that have made it possible for IBO to come and achieve this far. We would also like to congratulate all of them that have laid good tradition in IBO. IBO 2014 is organized by a team comprising staff from the Ministry of Education and Culture, faculty members from School of Life

Sciences and Technology, Institut Teknologi Bandung, as well as other academic members from other universities in Indonesia. There are also undergraduate students and previous IBO and National Biology Olympiad participants, providing various supports for the events. The organizer has worked hard to make this event fun, exciting and memorable for all of us.

Have a great time in Bali, Indonesia.
Happy 25th anniversary!



*Prof. Dr Ir Muhammas Nuh, DEA
Minister of Education and Culture,
Republic of Indonesia*





Indonesian teams at former Olympiads





happy students during IBO



How IBO started

In the mid-sixties Czechoslovakia was the first country starting with a National Biology Competition. Poland and Bulgaria followed with similar biology competitions. Soon after the German Democratic Republic and Soviet Union started competitions in biology at universities and at regional level. All these competitions consisted of a theoretical part, usually testing student's knowledge and a practical part, taking place in the laboratory or in the field, or both. After unifying the National Biology Olympiads in former Czechoslovakia (joining together the Czech and Slovak parts) in 1981, the close cooperation between the Biology Olympiad working parties in Czechoslovakia and Poland resulted in bilateral competitions for the winners of the Czechoslovakian and Polish Olympiads. The experiences of these competitions, held in 1985 – 1989 were quite positive and a stimulation to establish a real International Biology Olympiad (IBO).

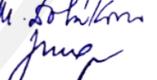
In order to get support from other countries the Central Commission of the Czechoslovakian Biology Olympiad organized in Prague an international seminar devoted to biological

“Everybody welcomed the idea to start an international competition”

competitions in June 1988. Deputies from the ministries and representatives of the existing biology competitions were invited. Besides Czechoslovakia as organizing country, four countries accepted the invitation: Bulgaria, DDR, Poland, and Soviet Union. Information was exchanged about the organization of biology curricula at primary and secondary school levels and also about the organization of national biology

competitions. Important topic was also organization and content of the future international biology competitions. Everybody welcomed the idea of starting an international competition. Of course some Central Body was necessary. So it also was decided to establish a special IBO Coordinating Centre (CC) in Prague at the National Institute of Children and Youth (NIDM), belonging to the Ministry of Education.

It was not surprising that Czechoslovakia, as the most experienced country, was appointed as organizer for the first IBO to be held in July 1990 at Palacký University in the city of Olomouc. The scientific content of the competition was related to general biological disciplines and based on the

ELR :	S. Mladenova :		
NDR :	dr. E. Schulze :		prof.dr.E.Zabel: 
FLR :	doc.dr.D.Cichy:		prof.H.Sandner: 
SSSR:	V.I.Sivoglasov:		prof.dr.VI.Lepin: 
ČSSR :	dr.M.Doláková :		doc.dr.M.Tetter, CSc: 
	ing.J.Jungr :		

Signatures of representatives present at the 1988 seminar.

textbooks used in secondary education in the participating countries. The following fields were mentioned as suitable: molecular biology, cytology, anatomy, morphology and the physiology of plants and animals, genetics, genetics and ecology.

A preliminary version of the Organization Rules was formulated and it was confirmed that every country would appoint a coordinator as the official IBO representative. The first IBO coordinators met again during the final round of the 23rd Czechoslovak National Biology Olympiad. This event was held May 1989 in Brno, the city where Mendel did his famous investigations: an excellent place to make an official start to the international competition. In Brno the earlier version of the IBO Organization Rules was approved, including a time schedule of procedures and operations for future IBOs. Belgium, also present at the meeting with two representatives, was accepted as a regular participant of the 1st IBO. Some more agreements about general IBO rules decided in Brno were:

- Official languages of IBO will be English and Russian.



founders of the IBO

Tomáš Soukup



Vítek Bičík

Pavol Eliáš



Jan Stoklasa

- The Russian Federation was accepted as host of the 2nd IBO (July 1991).
- In the 1st IBO the theoretical part will include “classical” questions, diagrams, slides and video. The questions should pertain to the biology taught in the last two years of secondary school level. The tasks should be prepared in such a way that the competitors will demonstrate not only actual knowledge and skills, but also their standard of biological thinking. Some of the tasks of former Czechoslovakian national competitions were selected to show what competitors of the first IBO might expect.
- In order to be able to produce a good quality theoretical test, all coordinators promised to send a set of 50 questions to the IBO host by October 31st, 1989.
- In the practical part, the competitors were expected to deal with the following ecological methods, science skills and working techniques:
 1. *Observation through a magnifying glass: an ordinary one (magnifying 1.5x and 10x) and a stereoscopic magnifying instrument.*
 2. *Observation through a microscope (binocular*

“All coordinators promised to send a set of 50 questions to the IBO host”

- microscopes with a cross stage and interior lighting).*
3. *Preparation of thin slices from living or fixed plant material with a razor blade and of a native microscopic preparation, including sample staining with a safranin solution.*
 4. *Sketch of the observed microscopic preparation and description of the structures seen.*
 5. *Knowledge of the common plants growing in mesophyte deciduous forests and meadows, similar knowledge about types of insects in the same habitats. Knowledge of the national names of plants and animals.*
 6. *Knowledge of the classification of typical species (genera) into higher taxonomic units (families, orders).*
 7. *Dissection of a flowers and determination of the flower patterns.*

8. *Knowledge of the main skeleton parts (common field or meadow mammals, birds and the frog).*
9. *Knowledge of the anatomy of insects.*
10. *Ability to compare the structure of objects living under differing conditions and characterization of the differences observed.*
11. *Making of precise records of the observed phenomena in a logbook.*

Of course many people were involved in establishing the IBO. Soon after the start four of them took up a prominent role as regular representatives and participants in IBO.

- Dr Jan Stoklasa, didactic expert at Prague Charles University, and main author of the 1st and 3rd IBO competition tasks.
- Prof. Pavol Eliáš, ecologist, very experienced in the Slovak Olympiad and also author of tasks in 1st and 3rd IBO.
- Dr Tomáš Soukup, experienced in the Czech Biology Olympiad and becoming Head of the IBO Coordinating Centre.
- Prof. Vítěk Bičík, from Palacký University, where the 1st IBO took place.

The early IBO years

Of course the very first IBO years were an interesting period. Almost everything had to be more or less invented for the first time. Things that look quite obvious now, were not like that in the beginning. Think about the impact that winning a medal may have. Some delegations were and still are really eager for their students to win medals. So it was clear that IBO procedures had to be formulated and fixed very carefully and that was time-consuming.

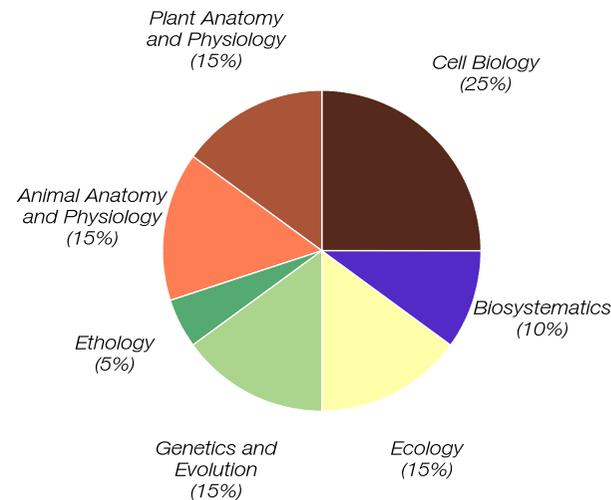
We can illustrate this with two examples.

1. How to design proper tests and how long should the tests be?

Tests should be interesting and challenging, optimally discriminating and still fair to the students. Finding experts in biology was not the problem, but finding experts being able to translate biological problems into good quality IBO questions and tasks was much more difficult. In order to help IBO hosts to produce the IBO tests, it was concluded that all coordinators should send in good quality questions, to be used in the theoretical test.

2. What exactly should be tested?

To answer this question it was necessary to check all kind of textbooks used in the participating countries and compare the content. A list of required knowledge elements was produced, discussed and finally skipped because the majority agreed that this would lead to just learning all those facts by heart, which was not in line with the aim of IBO. Only general fields were defined and the desired proportions among them in the theory test were negotiated:



It was decided that every IBO host should advise all IBO coordinators about the direction of the practical task, so competitors would have an idea about what they will expect. Some practical tasks were well designed, really original with the focus upon problem solving. But there also appeared questions, which could be answered just by reasoning or guessing without performing experiments. This put pressure upon the initial fixed equal amount of points (50% – 50% balance) between theory and practical. Furthermore it was complicated to arrange just one practical session for all students. So right from the beginning it was necessary to split up the practical task in parts, which had to be taken by students in shifts.

Everybody agreed that the IBO examinations should focus upon students' reasoning, science process skills and application of their biological knowledge. It was explicitly agreed that questions testing only knowledge, should not exceed 25% of the total points and that the practical tasks should require biological skills and drawing conclusions. It turned out that this requirement was not easy to fulfill at all. Jury members were not really happy about the stress upon knowledge especially in the

(sometimes too) many taxonomic questions. But surprisingly most students did not complain at all.

In order to save translation time, tasks were originally prepared and presented to the Jury in language versions covering all the native languages of the students. But this approach did not work. English and Russian versions were without problems but for the other languages it was too difficult to keep the same quality. The wording was not always accurate and sometimes even confusing. A funny example is: “*you find on your table a beaker with some freshly cut pieces of the stem of a plant*” was translated into “*on your desk is waiting for you a flower vase filled with stalks of grass*”.

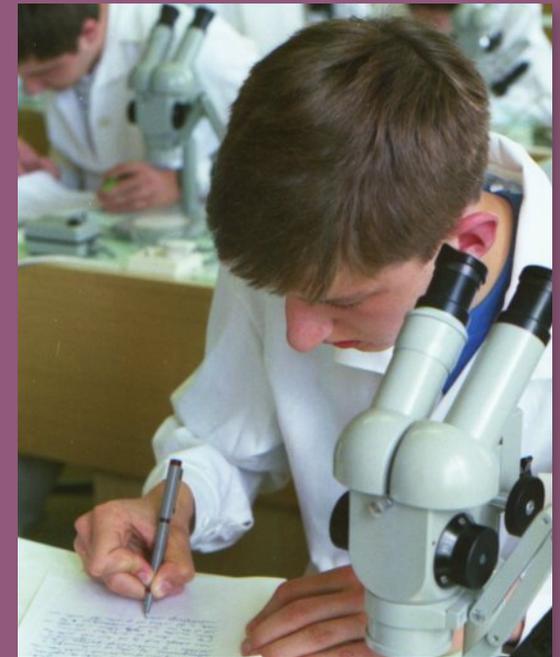


The very first IBO medal.

Also because of an increasing number of participating countries, it was decided to restrict all communication and test materials to only Russian and English.

Of course marking and grading was important. Who will do it, the Jury or the host? We all know the Olympic motto *participating is more important than winning*. But still during IBO competitions some Jury members and country coordinators interpret this motto differently and so checking the awarded scores really was a hot issue. For this reason from the very beginning it was decided that marking and grading of IBO exams should be as simple and objective as possible. Open-ended questions were thus excluded. All questions were “closed”, e.g. designed as multiple-choice, true-false, matching, or filling out a code or number. Lots of discussions took place on the point allocation for the questions, leading to a 0 – 1 – 2 point system per question.

Concerning rewards it was decided that all students should be presented with a special certificate. Furthermore, 10% of all students were awarded with gold medals, 20% with silver and bronze belonged to the next 30% in rank order. Announcing the ranking in the closing ceremony should be bottom up, starting with the lowest



practice...





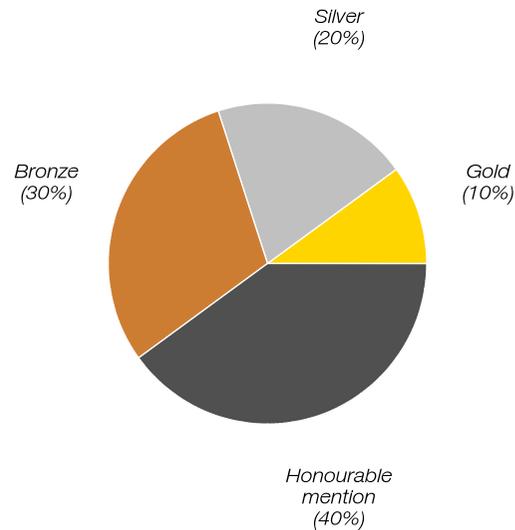
...makes perfect



position and ending with the top. Offering of valuable prizes or money was not part of the IBO aim, rather just the honour. Right now it sounds strange, but in the beginning all participants got a small amount of pocket money. After two years this stopped.

In the early IBO years, it was obvious that everybody was motivated to make the best of it. No egoistic political nonsense talks but only positive purposeful striving for the best possible solutions and success of IBO took place. That was inspiring for everyone. A great help was the so-called

'Advisory Board' (AB) meeting, started after the first IBO. Past and future organizers met together in Prague in order to discuss possible improvements and share planning information for future IBOs. Active coordinators from participating countries with ideas and proposals for improvement were invited as well. Over the years, this AB forum has proven to be a very helpful and useful platform.



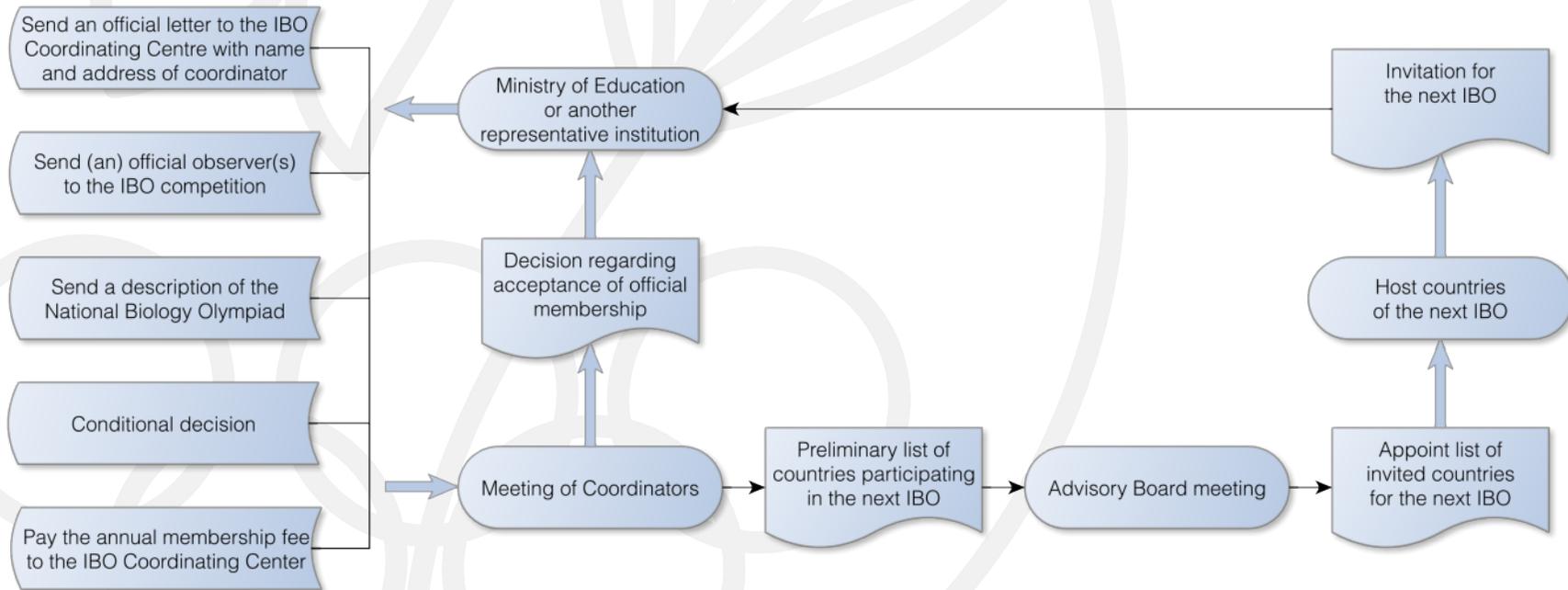
Certificate of the 1992 top gold winner.

The competition

The International Biology Olympiad is a scientific competition for world's most talented high school students. It consists of two examinations: a practical task (lab work) and a theoretical test. Every participating country may send four

students, being the winners of their national competition and attending a regular school at general secondary education level. The tasks presented to the students focus upon solving biological problems requiring inventiveness,

creativity, reasoning skills and biological knowledge. Every year the Olympiad is in another country. Normally it is in July lasting 8 days, from Sunday to Sunday.

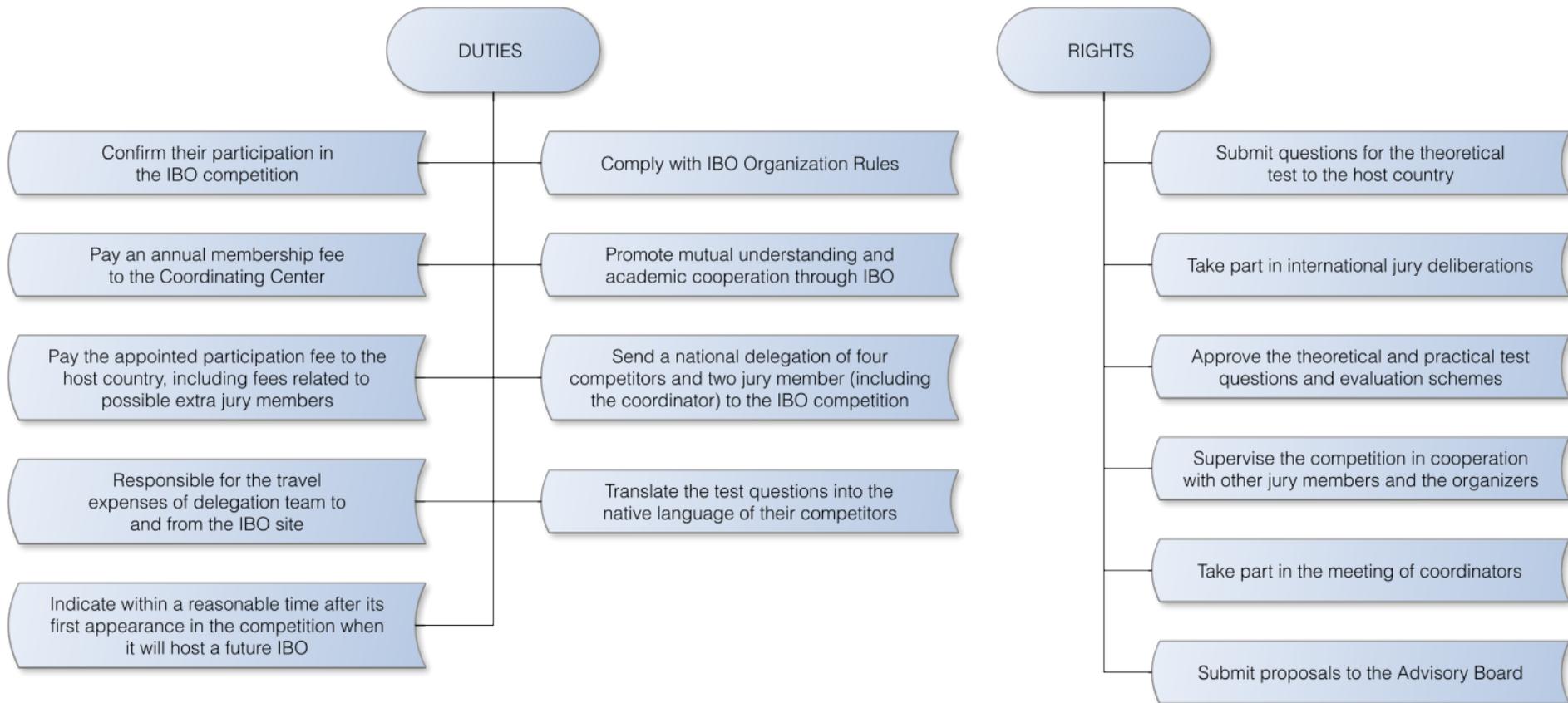


How to become an official member of the IBO.

It is obvious that the students participating in IBO are very talented, their interest in science and biology goes way beyond the school program. Of

course the prime focus of the Olympiad is on the competition, but the IBO not only is about science, biology and excellence. It also through social,

recreational and cultural activities which stimulate the dialogue, friendship and understanding between promising youngsters, coming from so



Rights and duties of a country participating in IBO.

Example of an NBO description

many different parts of the world. In such a climate there is no room for political or religious propaganda. These sorts of activities are strictly forbidden.

Besides the four students, each country delegation has two adults as team leaders. They are automatically members of the international Jury, which checks, discusses and approves all test questions, answer keys, marking and awarded scores. The tasks are in two language versions of English and Russian, but they are presented to the students in their native language. The team leaders are responsible for the translation process. Each country has the right to submit questions for the theoretical test to the IBO host country. Answering these should not require specific biological knowledge going beyond general biological topics. The discussion about what is specific, what is general and what should be taught in secondary education are significant issues for team leaders. Most of the team leaders are academic professionals with expertise and experience in biology education. Their mutual discussions provide a good opportunity to learn about the educational practices and biology curricula

Country
Thailand

Name
THAI Biology Olympiad

Established
1991

Website
<http://tbo.ipst.ac.th>

Olympiad promotion
Website of the Institute for the Promotion of Science and Technology (IPST). Various organizations and schools usually promote Biology Olympiad. Press regularly covers the news of all Science Olympiad Competitions.

Posters
Posters and leaflets are sent to schools every year. This is paid for and distributed by IPST. The posters and leaflets stimulate schools and students to participate in the NBO.

Media coverage

Media mainly covers the receptions for Thai representatives when they leave for competition and when they arrive after the competition, especially at the airport. Some may invite Thai representatives for the interviews in a special TV program and the newspaper media.

Organization structure, categories and rounds

Round 1: the Academy for the Promotion of Science Olympiads (POSN) sets up Science Competition in April to select 60–70 students.
Round 2: examination is given to the 60–70 students selected from the first round to select 4 Thai representatives.

Tests

IPST set up a committee to administer the test. Test questions come from the working group set up by the committee.

Student training

Approximately 60–70 students participating in round 2 selection processes get one training



camp during mid April – May (3 weeks). The final 4 Thai representatives then get 2 weeks of training in June, before coming to the IBO in July.

Study materials

IPST biology books, POSN biology books, and Campbell's biology text books.

Awarding of students, prizes

In the second round, top 5 percents of students get gold medals, the next top 10 percents get silver medals, and the next top 15 percents get bronze medals.

National competition rules

The students who would like to compete in Thai NBO must have these qualifications:

- are studying in Thai school at secondary level;
- are not over 18 years old of the current school year;
- are Thai citizen.

Financial support / resources

Thai government provides support for the

selection process. The Thai IBO team gets support from the government to come to the competition.

Support of Ministry of Education

All budget comes through the Ministry of Education.

National committee

The Board Director of IPST set up the committee every year. Normally, the chairperson of the Biology section of Science Society of Thailand chairs the national committee that consists of biology teachers from various organizations and some of Thai IBO team members.

IBO team

The Thai IBO team consists of 4 biology teachers from various organizations covering different disciplines of biology and one manager from IPST. The team is appointed by the national committee every year.

throughout the world. This is useful information for improving education in biology, reflecting upon the state of biology education in the own country and learning about what happens in others.

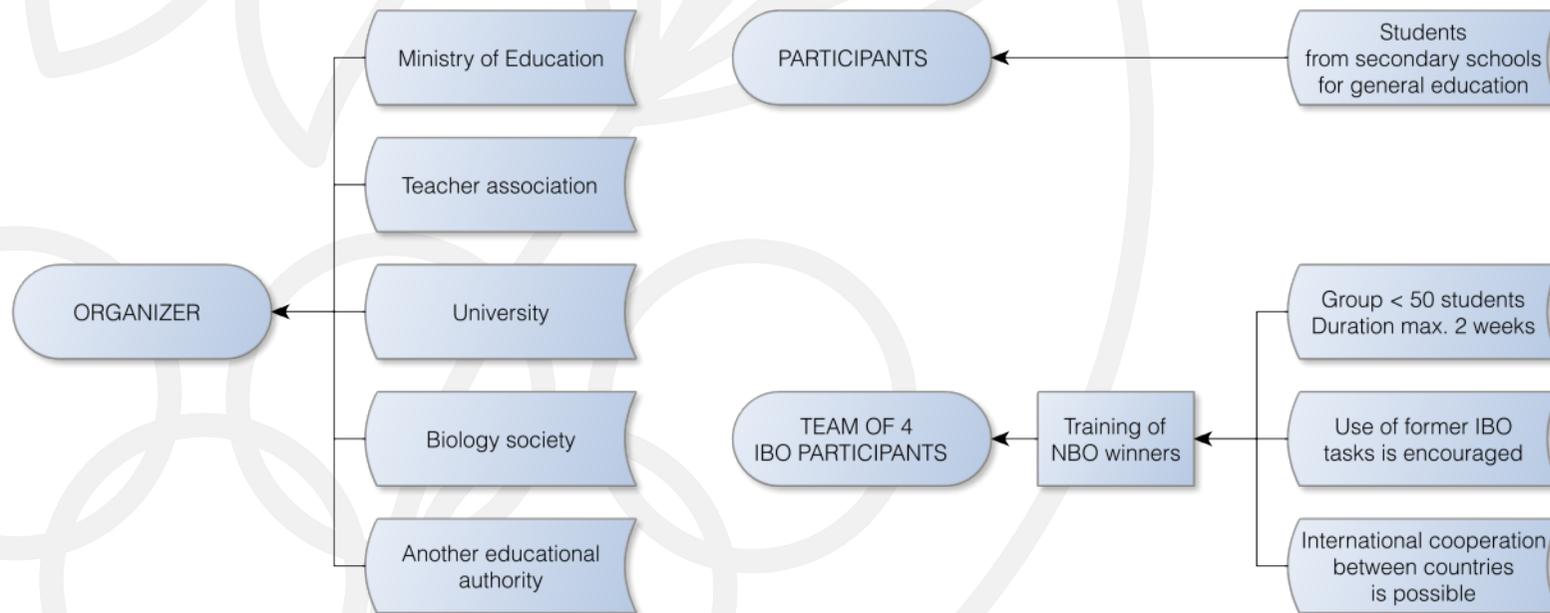
A country wishing to join IBO should first send an observer in order to learn about all procedures. After that the meeting of IBO coordinators will accept the country as an official member and IBO participant, but there are some conditions and duties to be fulfilled. Firstly, of course the country has to organize a yearly National Biology Olympiad (NBO) and provide the IBO Coordinating Centre with a description of this competition. The NBO procedure is not prescribed, every country is free to do what they like, but students in all general education schools should have access to the NBO competition. The committee responsible for the NBO can belong to the Ministry of Education, a Teacher Association, university or even an educational authority like a foundation for nature reservation or curriculum development. The Ministry of Education or another representative institution should write an official letter to the IBO Coordinating Centre, indicating which person is the official coordinator of the country. Also the

annual IBO membership fee has to be paid to the IBO Coordinating Centre.

Normally, students are selected in different NBO rounds in which they have to deal with test questions. In some countries students take their tests at a university, with earlier selection rounds which may be regional at local schools. The top

students can be trained together in scientific and biological skills. In order to avoid specialized training the maximum length of training in a group with fewer than 50 pupils should not exceed two weeks. Countries willing to cooperate in the NBO are allowed to do so, but students participating in IBO should go to school in the country from which they are a team member.

See for more information the included schemes initially constructed by IBO member Alex Friedmann and the schematic description of the Thai NBO.

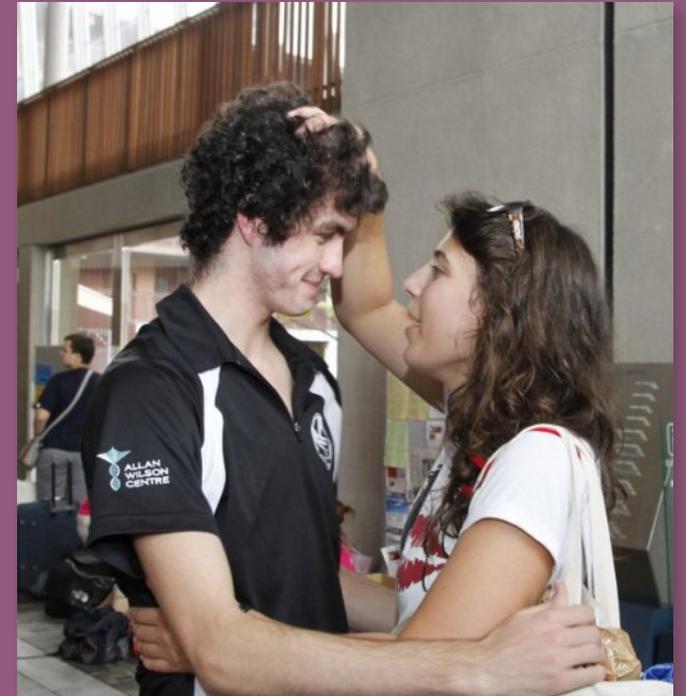


Schematic overview of a National Biology Olympiad.

every country sends four students



going for friendship





The Olympic oath

An Olympiad is a competition and of course, like in all Olympiads, fairness is a requirement. Unfortunately it's not always like that. Compared to the sports Olympics, the IBO has a good reputation with no reports of drug enhanced performance! In the history of the IBO altogether 3517 students have been participants and only 5 times a country was found to have been cheating. This led to the disqualification of 12 students in total, which is a very small fraction.

In order to stress the importance of fairness during the opening ceremony of each IBO, all participants and leaders take a solemn oath, a ceremonious and precious moment. Mostly a student from the host country takes the oath first. He or she comes forward and proclaims the oath, while all competitors are standing, raising their right hand and repeating the following words:

We, competitors of this International Biology Olympiad solemnly swear that we will answer the theoretical and practical competition questions in the most responsible way and we will compete honestly according to the principles of "fair play".

"Compared to the sports Olympics, the IBO has a good reputation"

This commitment to fair play is repeated by the members of the International Jury and the procedure is quite similar. Only the words are slightly different.

We, the members of this International Biology Olympiad Jury, solemnly swear to judge the competition according to the valid Rules accepted for this Olympiad and according to the principles of "fair play".

In the early IBO years the vow was expressed in two languages English and Russian. For years Prof. Vítěk Bičík, one of the IBO initiators and skilled in Russian and English, was the representative for the Jury. His performance always was very impressive.





The Cup

An event like the IBO deserves a trophy symbolizing the solidarity, unity, togetherness, and community spirit of the IBO. For this reason, in 1991, the Russian organizers prepared a very special trophy with the aim that every IBO host may possess it one year and in each IBO it will be passed on to the following IBO organizer. In Machatskala (IBO 1991) Greece was appointed as organizer of IBO 1992. During the closing ceremony, the trophy was officially presented to the coordinator of Greece. Regrettably after several months Greece announced not to be able to host IBO 1992. Luckily, Slovakia took up the challenge to organize IBO 1992. But in July 1992 Greece did not participate in the IBO up with a team. The cup stayed in Greece and requests to return it were ignored, so it became clear that a new cup was required.

Thailand provided a new cup in IBO 1995. Thanks to the inspiration and dedication of Sumonta Promboon, the Thai coordinator, the presentation of the new cup became a very solemn happening. During the opening ceremony Her Royal Highness Princess Galyani Vadhana of Thailand delivered a beautiful speech, which was concluded with the

presentation of a marvellous new cup. It was a very majestic moment indeed.

Since then the cup has been passed on to each new IBO host, which is completely in line with the words on the cup from which Sumonta Promboon is the author: *The trophy shall travel around the world to promote biology and the understanding of mankind.*

Since 2011 a special new item is added which is related to the cup. In that year during closing ceremony not only the cup was handed over to the next IBO host. Also a special banner, prepared by the Taiwanese host was presented. Since then both cup and banner travel together.



*Sumonta Promboon
Thailand IBO Coordinator 1990–1995*





IBO Bodies

The IBO Coordinating Centre

The first official IBO institution was the Coordinating Centre (CC) established in Prague in the 1989. Originally the Centre was hosted by the National Institute of Children and Youth (NIDM), which every year organized Science competitions for the Ministry of Education of Czechoslovakia. This situation lasted until 2009 when the Faculty of Science of Charles University in Prague assumed responsibility.

The IBO Coordinating Centre acts as secretariat of

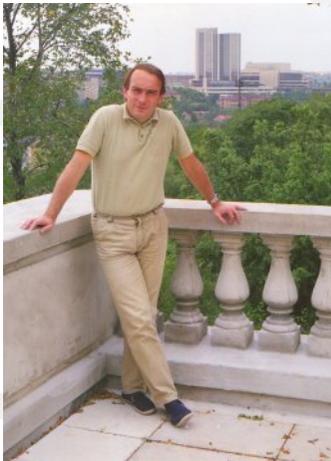
the IBO. It ensures information services for all member countries, accumulates relevant documentation, collects materials and information regarding the IBO, distribute materials and much more. The Coordination Centre fulfils its activities in close collaboration with the IBO Steering Committee. It organizes the annual IBO Advisory Board meeting.

The Coordinating Centre is staffed by Dr Tomáš Soukup, a scientist from the Physiology Institute of the Academy of Sciences. He has been involved in

IBO organization since the very beginning and still at present considered and working as head of the IBO CC. His service to the IBO now covers a period of 25 years.

Steering Committee

Soon after IBO start it became clear that a person should be nominated as leader of discussions of IBO coordinators and as official, representing IBO at important events. And so it happened. From 1991 on drs. Hans Morélis from the Netherlands, who already played an active and constructive role in



Tomáš Soukup, head of the IBO Coordinating Centre.



The initial location of the IBO Coordinating Centre.



The IBO Steering Committee.

Members of the IBO Steering Committee

G rard Cobut

Basically, I'm zoologist and a teacher. I first taught science a dozen years in secondary school, then I had the opportunity to join the Brussels Natural Sciences Museum staff. Today I'm heading the Exhibition Development dpt. Formal and informal education are both important!

At the time the IBO was founded I was chairing the French-speaking Belgian Association of Biology Teachers. IBO was a unique opportunity to popularize biological education: Belgium – north and south together – was one of the six IBO founder countries in 1990. I've been active in IBO since the

Shirley Lim

Associate Professor Shirley Lim has a scientific background in Ecology. She served actively in the Singapore Institute of Biology where she was the first lady to be elected as President. At present, she is Head of Natural Sciences & Science Education at the Singapore National Institute of Education and teaching many biological sciences courses. She was awarded twice the Certificate of Commendation for Excellence in Teaching. She started the Singapore Biology Olympiad and joined IBO in 2001. Notwithstanding Singapore is a small country the

Poon Kasemsap

Associate Professor Dr Poon Kasemsap joined IBO in 1997. Besides being Vice President of international Relations of the renowned Bangkok Kasetsart University, he is an inspiring lecturer in horticulture and a well-liked speaker on International Conferences focusing upon Agricultural issues. In 2013 the Republic of France

very first year and was immediately in connection with the brand new IBO Coordinating Centre in Prague and its ever-enthusiast Dr Tom s Soukup. Soon I joined the first Advisory Board meetings.

Shortly after that the web was invented, I launched a website for IBO, which evolved and which I'm still running. I was then happy to be helpful to my colleague and friend Hugo Vandendries since he started the yearly bio-video competition.

results of the team led by Shirley always are outstanding.

IBO 2012 was in Singapore and Shirley together with her colleague Tit-Meng Lim chaired this IBO with great success. Notwithstanding her role as chair she also was author of one of the practical tasks, which proved to be a nice and great challenge.



bestowed him with the award of Chevalier (knight) de l'Ordre du Merit  agricole. Poon was elected as IBO-President in 2008, a position which he since then practices with great diplomacy and wisdom.



Mary Oliver

Since my work with the Australian Biology Olympiad began, I have been committed to supporting the IBO for student participants, developing international links to promote biology, and research with gifted students of the IBO. I look forward to working and developing research with coordinators from all countries. I am now at Nottingham University working in science education.



Dennis Kappei

Postdoctoral Research Fellow, TU Dresden (Germany).

As a former participant I had the chance to live the exciting atmosphere and unique spirit of the IBO. With my work in the Steering Committee I hope to now give something back to the following generations and to help develop the IBO further as the key event that brings the brightest young biologist around the world together.



Some examples of

IBO meetings was appointed as Chairman of IBO Coordinators. In those years, with not very many participating countries, things were rather easy. Tomáš and Hans together were able to manage everything smoothly. Extra support was not required. Communication was by letter and fax, which worked out pretty well. Once a year having a beer in one of the appealing Prague pubs belonged to their rituals and during these meetings they easily managed to discuss IBO priorities. Gradually this changed. From 1995, IBO official documents often used also the term *Head (instead of Chairman) of coordinators*. The availability of computer applications and electronic communication devices made communications faster. Email communication started in 1996. But we all know that email and internet usage also led to a lot of new regulations and complications like failing internet service providers. This increase in workload, together with the increasing number of participating countries made it desirable to attract two vice-chairmen and so it happened in 2004. Dr Gérard Cobut of Belgium (also IBO webmaster) and Dr Eckhard Lucius from Germany joined IBO management. Everything else stayed as it was, with no complex money devouring structures. There

1990	For the theoretical test a content list is proposed and the IBO Guide is adjusted.	1998	Pretesting the IBO questions on forehand with an appropriate group of students is recommended.
1991	Both theoretical and practical tasks have to be balanced in difficulty and obtainable points.	1999	Competitors have to bring and sign an official declaration related to the conditions for participation.
1992	A new list of recommended skills for the IBO practical part is proposed.	2000	Use of mobile phones is completely forbidden during the competition.
1993	Host countries may ask a participation fee. IBO participants are advised to bring their own protective clothes for lab work.	2001	Delegations eager to use their own computer are free to do so. They can bring laptops, but local support should not be expected.
1994	Repeated participation of students in IBO is allowed if they are winners of their NBO.	2002	Political activities and propaganda are forbidden in IBO. Every delegation will bring their textbooks to the next IBO for an exhibition.
1995	All countries have to provide the Coordinating centre with a description of their NBO.	2003	Students should deliver their mobile phones to the organizers during translation and test sessions. In IBO tests we need more questions focusing upon handling information.
1996	Students may participate twice in an Olympiad as maximum, there will be no age limit.	2004	Computer facilities will be available for translation of the tasks. Bringing own laptops is encouraged.
1997	Info about IBO will be available on a website.		

Advisory Board proposals

	The maximum age of IBO competitors is fixed upon 20 years.		a short video film on the internet (YouTube or similar) about their preparation for IBO. The best one will be awarded.
2005	Assessment experts should be involved in producing IBO tests. Mobile phones should be switched off during Jury meetings.	2010	Again is stressed that within each country NBO should be eligible to all the schools. GHS symbols should be used for labelling flasks in IBO practical task.
2006	Dissection of parts or organs from vertebrates bred for the consumption is allowed in IBO practical tasks.	2011	All delegations will have web access while translating. IBO tests, older than two years, will be published on the IBO website. The 10% participants after bronze medals should be awarded a "Certificate of Merit".
2007	It is proposed to form a small subgroup of Jury members, to scrutinize the practical and theoretical exams prior to IBO Jury sessions.		
2008	Countries are encouraged to send good quality questions but this is no longer obliged. It is the other way around, now it is a privilege.	2012	An educational session will be held during the IBO focusing upon the exchange of educational information about biology education.
2009	Dissection of fish is allowed in IBO practical task. The translations of 5 to 10 randomly selected countries will be checked on integrity and the results of all students will be checked on statistical (in)consistency. National teams are invited to produce	2013	Structure of IBO website and IBO Guide will be updated. IBO educational sessions will focus upon differences between biology curricula of IBO member countries.

was just simple contact. Consultation and decisions about IBO affairs was mostly by email. This arrangement lasted until 2008 and with the increasing IBO member countries it was better to have an official Steering Committee for managing daily IBO events and procedures. Right now the Steering Committee consists of five members plus the head of the Coordinating Centre in Prague. These are all very dedicated people, who deserve admiration and appreciation because what they do for IBO is just volunteer work.

IBO Advisory Board

Normally during the IBO, the time schedule is very tight, not leaving much room for brainstorming about less urgent, but still very important reflections and evaluations of IBO procedures. So it was a good idea, proposed directly after the first IBO, to install an Advisory Board (AB). The aim of this Board is to evaluate former IBOs and propose improvements for future IBOs. Also the program of future IBOs is discussed. Invited to the meeting are past and future organizers as well as active coordinators presenting proposals for improving.

The Board meets once a year in between each IBO. Over the years this so-called AB meeting has proven to be very valuable. In fact all suggestions for stimulating a better functioning of IBO are born here. Each AB meeting leads to conclusions and recommendations to be discussed during the next IBO Coordinators Meeting and often, all recommendations are accepted at once.

Every year the AB meeting is in Prague (exception 2013, Bangkok). The IBO Coordinating Centre, since 2009 located at the Faculty of Science of Charles University, has arranged everything. For years now Hotel Standard, situated at Vltava river bank, is the place of residence. The main organizer and key person is Tomáš Soukup, Head of the Coordinating Centre. Thanks to his dedication and care for pleasant circumstances and facilities the meetings always are friendly, efficient and useful. In the day-time there are many discussions arising from the proposals of the participants. Normally the agenda is quite long and deliberations are lengthy. But after the business of the AB meeting, there is compensation through cosy dinners, singing and tasting Czech special drinks, enjoying places of historical significance in Prague, visiting Theatre, or bowling. The list of discussed AB issues is endless and very varied. See left for a small selection.

Board of the Coordinators

The main decisions about the aims and activities of the IBO are taken by the Board of Coordinators. This board meets annually during each IBO competition. A member country that sends students to compete in the IBO must appoint one coordinator to represent the country in this board although all the team leaders can contribute to the discussions.

International Jury

The International Jury is an *ad hoc* committee formed for each IBO competition. Its members are the two team leaders from each participating country. The International Jury discusses and approves the tasks submitted by the organizing country. This includes the answer key, and scoring scheme for evaluation of students' responses. In case of any suggestions, it makes decisions about necessary changes before the members of the International Jury translate the competition tasks into the students' native language. A distinguished scientist appointed by the IBO organizer usually chairs Jury meetings.

International Task Expert Group

In order to check and improve the quality of IBO tasks a small group of about six experts review the

practical and theoretical examinations for at least three working days prior to each IBO. They focus upon assessment criteria like conceptual formulation, scientific correctness, marking allocation plus rationale for marks and the balance of topics. The members of this sub group may be nominated by the International Jury and appointed by the host country to help with the preparation of the question papers.



Hotel Standard, for years the residence of the Advisory Board.



preparing a toast



2013 Advisory Board meeting

deliberations



2008 Advisory Board participants



seven angels in Prague



Advisory Board participants 2013



International Task Expert Group 2012

Esteemed guests

The International Biology Olympiad is renowned for its importance. Often esteemed persons like national presidents or royal family members are attending official IBO ceremonies and express their appreciation for IBO and IBO participants. On this page an impression.



HRH Princess Galyani Vadhana of Thailand

From the Inaugural Address delivered by HRH Princess Galyani Vadhana, IBO 1995

Presented at the opening ceremony of the sixth International Biology Olympiad in Thailand

I consider the International Biology Olympiad an important event where exceptional students who have embraced biology as their specialty are given an opportunity to fully develop their potential and to demonstrate their theoretical and practical capabilities to their peers from other participating countries.

It is my firm belief that the Olympiads are extremely beneficial to the scientific and technological circles. Not only have they necessitated the standardization of relevant syllabi, but have also contributed to the development of human resources in science and technology. These participating students could one day become renowned scientists whose contribution to the cause of science is recognized both in their own countries and worldwide.

From the speech presented by L. Kuchma, IBO 1996



PRESIDENT OF UKRAINE

To the participants of the VII-th International Biology Olympiad

Esteemed participants!

I cordially welcome you on the occasion of your winning the right to participate in the 7th International Biology Olympiad. Students from thirty countries of the world have come here to demonstrate their knowledge of nature, to share it with friends and to compete at this prestigious forum. What might be more important and valuable than striving for knowledge and desire to acquire the intellectual gains of mankind? My great desire is to believe and hope that amongst you are future great scientists, whose activities and discoveries might become a good protection for our blue planet.

President

A handwritten signature in black ink, appearing to read 'L. Kuchma'.

L. Kuchma

From the speech presented by A.G. Lukashenko, IBO 2003

President of Republic of Belarus

Dear boys and girls! You are representing your countries at the 14th International Biology Olympiad and therefore you are belonging to the best.

You come together here in Minsk to compete using your knowledge with other fellows. You choose for yourself one of the most intriguing fields of knowledge since biology now brings us constantly new, fantastic discoveries on the miracles of life on our planet Earth. It is not necessary for me to tell you, the experts in this field, how important today cognition in biology and relative disciplines, to understand the effect of human activities on environment and to undertake some steps for protection of nature. I am sure, that we all consider this Olympiad not only as instrument for youth motivation for huge steps in biological science. We also attribute this Olympiad to the International events that facilitate strengthening of friendship and brotherhood, contribute to the convergence of peoples and cultures.



President Lukashenko of Belarus



HIH Prince Akishino of Japan

From the speech presented by His Imperial Highness Prince Akishino, IBO 2009

Prince of Japan, Honorary President of the 20th International Biology Olympiad

It is my great pleasure to meet you all today at this opening ceremony of the 20th International Biology Olympiad in the 200th commemorative year of Charles Darwin's birth.

Biology is regarded as one of the most important academic areas for mankind and the global environment. The steady progress of biology and biotechnology have contributed greatly to our society throughout the 20th century by elucidating various aspects of the phenomena of life, as well as overcoming many intractable diseases, improving the environment, increasing food production, enhancing food safety, and so on.

There are still many issues left to which biology can contribute. The development of biology as a whole, including the basic areas that I have mentioned, is essential. Therefore I hope that biologists of the younger generation, such as yourselves, will explore extensive areas of biology.

I strongly wish you all excellent results in the competition while extending your circle of friends by exchanging information with participants from all over the world and a fruitful time here in Japan

From the speech delivered by Mr. Vincent C. Siew, IBO 2011 Vice President of Taiwan

I would like to extend my warm welcome to our guests who have come from 61 different countries. It is an honor and pleasure to host the IBO. It is also an honor to see so many talented young scientists

from every single continent of the world participating in the competition.

The field of biology has played a very important role in human civilization. Thanks to the progress in biology and biotechnology, we are now able to do a very good job of treating many diseases that were once fatal.

The biggest single challenge facing to human race today is a question of how to manage our ecosystem in a sustainable manner. Biology enables us to understand what must be done to maintain a global

ecosystem. For students and teachers of biology, this represents a challenge. The students taking parts in this Olympiad are the best of the best in your respective countries. I do believe your efforts will bring positive changes to human society.

I hope that you will all meet a lot of new friends while you are here. And you leave intellectually and rich by this experience.



HRH Prince Laurent of Belgium, IBO 2001



President Dr Tony Tan of Singapore, IBO 2012



Vice President Siew of Taiwan, IBO 2011

Prominent IBO persons

Dr Tomáš Soukup

Head of IBO Coordinating Centre

It is hard to imagine a nicer person than Tomáš Soukup. He is the charming glue between everyone involved in IBO. Since the start of IBO he is functioning as Head of IBO Coordinator Centre, and he surely is our most consistent and greatest supporter. Every IBO together with warm words of thanks he presents a small cup to the organizer during the closing ceremony. His work for IBO besides the scenes is incredible. Without him no nice and useful Advisory Board meetings. And if you like a glass of beer, especially Czech beer, drink it with Tomáš. Cosiness and pleasure is guaranteed. Below a small flashback of Tomáš on IBO.

How did you get involved in the IBO?

Working as a scientist at the Institute of Physiology of the Academy of Sciences of the Czech Republic I got involved in the Czech National Biology Olympiad (NBiO). This was not surprising as my wife worked at the National Institute for Children and Youth (NIDM). This institution was responsible for the organization of all science competitions in the Czech Republic. Many previous participants or

organizers of Czech NBiO stayed in close contact with this prominent Institute, making NIDM the ideal partner for helping to start an International competition. I belonged to the generation learning Russian at school and, due to my job, speaking English was no problem. That together with my experience in Czech NBiO was an ideal combination to ask me to take part in starting an International Olympiad. And so I did.

What was your role in the 1st IBO?

My major role, and I was the only one with this, were international contacts and collaboration with team leaders and observers speaking English and Russian. Often I functioned as interpreter between Russian and English speaking colleagues. We had a lot of fun, as I often mixed both languages or talked to Russian speaking in English or vice versa. Certainly I also helped with checking and translation of test tasks. But perhaps my most important role was to handle with all complications, explain them and tried to solve them with coordinators and observers and UNESCO representatives with smile. Perhaps I can call it “to keep the spirit of IBO – “to make friendship” – as high as possible.

What was the reason to ask you for secretary of the IBO Coordinating Centre?

Maybe because I succeeded in making friendships and proved to be able to find possible solutions of most problems that occurred.

Looking back to all these IBO's: What was your most beautiful experience? What did you like most? What was most striking?

Perhaps I can answer all 3 questions together, as they are related. There are 3 things leading to best experience and which I like most (although I was so surprised by them):

1. Friendly atmosphere among Jury members, often meeting R. and E. speaking, but showing that friends can understand each other even if they speak different languages,
2. Very warm and working acceptance from organizers, it was nice to feel that they trust us and relay on our opinions and
3. Students, I was always impressed by their knowledge, their skills and relation to nature, although I can mainly speak about our Czechoslovak and later about Czech students.



Tomáš Soukup



*And looking back to all AB meetings in Prague.
How do you feel about that?*

What I can say more about time when the best friends meet once a year? What I can say more about time when you sit twelve hours with hard working enthusiastic people? It was and it is great, I love it. Maybe it is one of most important reasons, why I could stay with IBO for such a long time. It gave me strength and the best feelings.

Drs Hans Morélis

Head of coordinators from 1992 to 2008

After finishing my study Chemical Technology at Amsterdam University a compulsory military service was my fate. This could be avoided in becoming a teacher so I decided to have a try and more or less immediately I knew this was what I wanted. The contact with young students and having the possibility to contribute to their development was very inspiring. Especially challenging the brighter ones gave me satisfaction. Being eager to improve learning processes I became involved in all kind of educational projects and ended up as Head of Science of the National Institute for Curriculum Development of my country. It gave me good feelings that in this job I

really could work on making lessons more profitable for students. In 1990 a request arrived at my institute inquiring whether our country was interested in the freshly started IBO. Without hesitation I said “yes”, and attended the 1st IBO in Olomouc as observer. It was great. In IBO I met fantastic colleagues willing to make the best of it through cooperation and willing to work for the development of promising talents. I embraced the Olympic spirit and initiated the start of NBO in the Netherlands.

*“Go for the three P's of
Passion, Performance
and Pleasure”*

Within the IBO I felt very much at ease. I liked it. To be honest, biological content had not been my priority. My focus was upon a good procedure of the IBO with things such as smooth organization, good quality tests, challenging students (making them happy and interested in science) meanwhile investing in good relationships among all leaders. This somehow made me a proper person to play the role as IBO representative at official meetings and

I was awarded the title head of Coordinators, which I surprisingly continued to be until 2008.

Of course IBO 1993 held in the Netherlands was very special and it was honourable for me to be the president. Our team got many compliments for organization and for quality of tasks. Still I have to confess that realizing this quality was so strenuous and stressful that I hardly was able to enjoy everything. I remember I missed all excursions. But after IBO 1993 it was good to be useful as advisor for IBOs to come. That gave me good feelings.

Over the years my love for the IBO increased more and more. The cooperation with so many dedicated people is beautiful. I enjoy the happiness and pleasure of the IBO participants. During each closing ceremony, at the moment the winner is declared, I always feel moved. I said goodbye to the IBO in 2012 and being for the last time on the stage I took the opportunity to sing for everybody an IBO song based upon “make new friends” and to encourage all students to keep in mind the motto I always strive for. Go for the three P's of *Passion, Performance and Pleasure*.

It is obvious IBO has been an essential part of my life. It was magnificent to be involved for so long.

Hans Morélis with volunteers



toast on IBO



opening ceremony



singing

IBO song (to the tune of: make new friends)



1 2
I - B - O , I like to win a me - dal
3 4
may - be sil - ver , but I long for gold

Prof. Vítěk Bičík

Prof. Vítězslav Bičík, by his IBO friends called Vítek, is retired professor of Olomouc Palacký University, where the very first IBO took place. He not only belonged to the initiators of IBO, but also during the IBO itself he played a prominent role. He is an appreciated member of the IBO Advisory Board. For years he was the one who on behalf of all coordinators took the oath on the stage during IBO opening ceremony, both in Russian and English and in a very impressive way. Find below his reflections upon IBO.

How did the idea to start an International Biology Olympiad arise?

The idea was born thanks to years of experience in organizing National Olympiads and competitions of Czechoslovak and Polish secondary school students in biological knowledge. The scientific part of the IBO was initiated primarily by a quartet composed of Dr Jan Stoklasa, Prof. Vítězslav Bičík, Prof. Pavol Eliáš and partly Dr Tomáš Soukup, who was involved in the Czech Biology Olympiad and had connections with NIDM. This institution, the Nationale Institute for Children and Youth, was responsible for organizing Czech Science Olympiads.

How about sympathizers and supporters?

We found them among people working for NIDM (Jitka Macháčková), the Ministry of Education, Faculties of Natural Science and professional Boards for the National Olympiad led by Dr Farkač. Funds for organizing the first IBO were released mainly from the budget of the Ministry of Education and UNESCO gave a small contribution.

What was the reason Czechoslovakia became the cradle of the IBO?

During numerous meetings with Jan Stoklasa in Olomouc and Prague I said already in 1987 that if there exist International Olympiads in other natural sciences, we must use our experience from biological competitions and make every effort so that biology also had its International Olympiad.

How did you experience IBO 1990 and after?

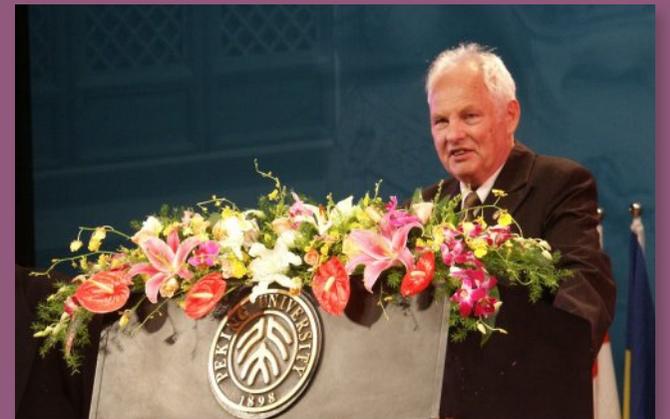
Organizing the 1st IBO required a lot of energy. Beginnings are always hard. However a solid basis was laid so that IBO became a world competition of young talented biologists. I took part in the IBO until 2005 and in all meetings of the Advisory Board. I will never forget the very friendly atmosphere. Team leaders and coordinators of IBO really create a sort of big harmonious biological family.

What did you like most?

A wonderful feeling of helping colleagues from Thailand in 1995 with organizing IBO will remain forever in my memory. After we have used our numerous experiences from the first five IBOs, we helped with Pavol Eliáš our colleagues from Thailand to organize the 6th successful IBO in Bangkok. I also like to remember as we managed in a short time to organize the 3rd IBO in a Slovak Poprad, when the Greeks renounced the organization at the last minute.

What was disappointing?

In the 1st IBO in Olomouc we showed in practical task some real very typical species and also through video. The students had to recognize them and write the names in their national languages. I like that as according to me students should be able to name organisms and know the appropriate scientific terms. Right now with more than 200 competitors this is impossible. We can only protect what we know. Using a small number of scientific terms is fine and brings competitors closer to each other. I suggested to include this in IBO but without success. That makes me sad.



And looking back to IBO as a whole, how do you feel about it?

I am very glad that the IBO today is a wonderful international competition that is able to find the most talented young biologists. We have found out that in the Czech Republic every former competitor of IBO works either at some university or the Academy of Science. And I am happy that I could also do something for the development of the biological Olympiad at its national and international levels.

Prof. Pavol Eliáš

One of the IBO initiators

Prof. Pavol Eliáš is the only person attending all IBOs since the beginning in 1990. In fact his Olympiad story started much earlier, already in 1973 in the Slovak Olympiad. If you like to know something about the IBO cradle, ask him as he was involved in all steps leading to the IBO we know now. Besides being one of the initiators of the IBO Prof. Eliáš played a major role in the 3rd IBO 1992. This IBO was held in Slovakia in the Town of Poprad, because suddenly Greece, appointed as IBO 1992 host, was no longer available. It was a critical situation. But thanks to people like Pavol Eliáš in a

very short time a low budget, but excellent, IBO was realized with nice and interesting tasks. In 1995 the Thai organizers were facing problems in carrying through the Russian version of the tasks. Pavol accepted the challenging invitation to come earlier to Bangkok and to be a member of the team creating the Russian versions. Below a short reflection of Prof. Eliáš on his Olympiad activities.

The Biology Olympiad (BiO) is a part of my life. I already was involved very soon after finishing my university studies and became the youngest

member of the Slovak BiO commission in 1973. The Olympiad also is a part of my family life as my wife, being a teacher, for many years coordinated the Olympiad in her school and she even was awarded for her activities in Bio. After 1980 the Slovak and Czech Bio Olympiad were united and I continued in being involved in activities like Jury member, presenting courses and preparing practical tasks. The Presidium of the Czechoslovak Central Committee of BiO, supported our efforts to establish an international competition in biology. The first step was the Czechoslovak-Polish competition starting in 1985, which was really successful and inspiring. So in 1988 a special meeting was arranged with representatives of five so called socialistic countries and of course I was one of the delegates. This meeting was very crucial for establishment of the IBO and led to the what became the 1st IBO in Olomouc in 1990 with 6 participating countries. And since then, besides my professorship at Nitra university, I kept going on with Olympiad activities. Looking back I'm now 40 years in the Biology Olympiad and 25 years in IBO, that's my life. But above all I am a plant loving scientist: plant ecologist, botanist, geobotanist, eco-physiologist, plant population biologist and nature conservationist.



Prof. Pavol Eliáš

Ralf Kittler

*Participated 5 times as a competitor in IBO **

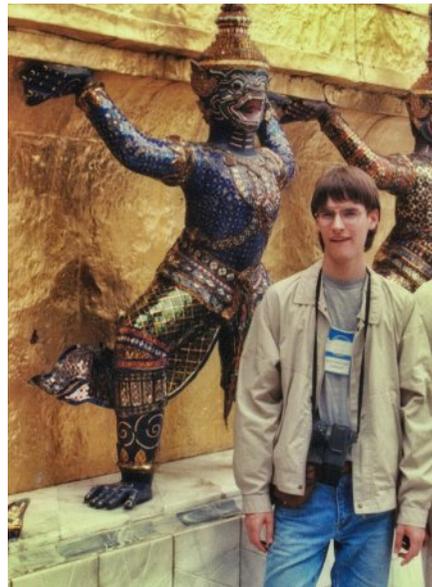
Ralf Kittler is Assistant Professor of Pharmacology at the University of Texas Southwestern Medical Center in Dallas, Texas (USA). Currently, he studies the role of transcription factors in the development and progression of cancer with the ultimate goal to develop new targeted therapies for common solid tumors.

The IBO has been an important part of my life: From 1992 when I was just 14 years old to 2007 when I just turned 30 I missed only two Olympiads (Turkmenistan in 1997 and Sweden in 1999), and I experienced essentially all aspects of the IBO as a student participant (1992 – 1996), co-organizer and student mentor for the German NBO (1997 – 2006), co-organizer of the 9th IBO in Germany (1998) and as a member of the International Jury (2000 – 2007).

I have fond memories from the Olympiads I attended as a student – too many to recount all of them here. One highlight was sailing on the IJsselmeer in the Netherlands (4th IBO, 1993). Another memorable event was hiking in the gorgeous Khao Yai National Park in Thailand (6th IBO, 1995) despite a nasty encounter with a leech – the only really unpleasant experience I had with

IBO in 15 years!

Competing successfully in the IBO – I got a medal every time – strengthened my desire to become a scientist, but the IBO is certainly not only about winning medals. Having the opportunity to meet and interact with students both from my home country and more importantly from all over the world was equally important for my development as a scientist. In all labs I have been so far, I have worked with people from different countries and with different cultural backgrounds - in my current



*Ralf Kittler as IBO
1995 participant.*



*Ralf Kittler as team leader
in IBO 2004.*

* In the early IBO years no limit existed on the number of times a student could participate. Since 1997 the maximum is twice.

Olga Waxmann and Alex Friedmann

Since 1998 Olga Waxmann and Alex Friedmann are involved as voluntary supporters of IBO. Their skills in scientific knowledge, using computer and Russian language (both are originating from Ukraina) has shown to be very helpful for IBO organizers. Find below a short reflection of them upon IBO.

How did you got involved in IBO?

We joined the IBO in 1998 by accident. Germany was a host country for IBO and organizing

committee had looked for the translation of the tasks and Jury sessions. Olga has worked at the Institute of the pharmaceutical Biology at the University of Kiel and some of her colleagues have recommended her to Eckhart Lucius. We were involved in the translation of the tasks and preparation of the book about the IBO in Kiel. After this event we started to participated regularly in the meetings of the Coordinating Committee and practically in all IBOs with the exception of 2002 in Latvia.

What do you like most in IBO?

IBO is an excellent opportunity to introduce young people to study one of the most interesting sciences about humans and their resources, which can support the mankind on our planet. IBO promote the international cooperation in this direction.

What are your most beautiful experiences?

The most fascinating for us was the welcoming speech of Carl Linnaeus during the IBO 1999 in Uppsala, Sweden.



Olga Waxmann



Alex Friedman



*Appearance of Carl Linnaeus,
IBO 1999*

In memoriam

Jan Stoklasa

Who of the IBO coordinators of the 20th century would not know Jan Stoklasa, a smiling, charismatic man, who always used to hold his camera ready. He was an university teacher who had devoted his skills to the work with talented students since the beginning of his career. He became an expert in Didactics of the Natural Sciences at the Charles University in Prague. As a vice-chairman of the Czech Natural Sciences Commission he initiated and became one of the founders of the Olympiad in Biology. In close collaboration with the National Institute for Children and Youth he was the chief guarantor for Czech contests in biology. Many of the dissertations of his students were directed towards so called "green biology", implying exploration in both the field and the lab. When educating future teachers he used to give preferences to field excursions.

In 1989 the idea arose to start an official international biology contest which resulted in what now is known as the IBO. Of course Jan Stoklasa was present at IBO cradle and for eleven years Jan Stoklasa together with Prof. Víték Bičík

and Dr Tomáš Soukup used to accompany the Czech delegation of students.

The first IBO in Olomouc was experienced very intensely and hectically. He was the author of most tasks. His search for live material also made his family very busy. During the meetings of coordinators one of his daughters helped with the English language, the other one made all biological drawings. He also documented the contest with photographs. Even more frantic was the situation during the third IBO, because Greece suddenly at a very late moment refused to be the host. Luckily Poprad stand in as IBO site and notwithstanding the limited available time Jan Stoklasa immediately offered to be one of the main authors of the tasks, which he managed exceptionally well.

Without any exaggeration one can say that the Olympiad was his affair of the heart. He liked to recall the evenings with music which created friendly atmosphere among the people from different countries. He liked to sing and he was a good singer himself.

One of his characteristic features was his enormous

diligence. As a result it is difficult to enlist all his activities. For the last time he accompanied students to IBO 2001 in Brussels. After that he still kept busy in organizing the Czech NBO until his sudden fatal heart attack in summer 2004. A big loss. His imprint in the Biology Olympiad was distinctive and should not be forgotten.

Jan Stoklasa has shown us that the IBO is very demanding for all who take part in it, but it is a unique contest for young enthusiastic students, an opportunity for them to compare their knowledge and also to start many friendships.

— *Dagmar Stoklasa*

Eckhard Lucius

Dr Eckhard Lucius joined IBO in 1995 as successor of Prof. Erwin Zabel, one of the IBO founders. From the beginning he presented himself as a dedicated Jury member, with an open eye for his German team, fairness towards all students and prosperity of IBO. He was a worthy discussor in Jury. His positive attitude and sense of humour were loved. He was a reasonable and loyal member of IBO Advisory meetings in Prague and every year during AB closing dinner he performed a famous and

highly appreciated act: the presentation, decapitation and eating altogether of the Kieler sprats delicacies (a special small, smoked type of herring).

During IBO 1998 he took up the role of chairman of the Organizing committee and we all know this Olympiad was one the best organized IBO's ever. Eckhard was a great supporter of challenging and stimulating bright students. Luckily for him his position at Kieler IPN (Institute for Science & Math Education) offered the possibility to also invest in other competitions for students with great potentials: the EUSO (European Science Olympiad) and the IJSO (International Junior Science Olympiad). It is not surprising that in all these competitions he played a prominent role. In 2007 the EUSO was held in Germany (Potsdam) with Eckhard as director. He was a member of IBO steering committee from 2004 up to 2008. He quitted this position due to his health condition.

In September 2011, after an apparent successful medical operation, he suddenly got back pain and died unexpectedly due to a pulmonary embolism. It was a great shock. We remember him as a nice, openhearted and valuable person.

Andreas Ehn

Andreas Ehn was sent as an observer to the first IBO in Czechoslovakia 1990 by the Swedish government. The next year he was coordinator for the first Swedish team. He had that position for ten years. In the Swedish Association of Biology Teachers he was a keen member and continued his work for more than 50 years until he passed away.

In 1999 Sweden was the host of the IBO, which took place in Uppsala. The Jury stayed at Hotel Linné next to the house and garden where Linné lived. The first evening the meal was served in his conservatory, Orangeriet. Due to the qualified work of Andreas the competition was of very high quality. The papers and the students' work in the laboratories were well liked.

After the IBO in Uppsala there was only one thing Andreas regretted. 1998 he had promised the team from Kuwait that they should have some rain when they came to Sweden. But that summer we did not get any rain during the IBO week.

Andreas was a very kind and humble man. He was an excellent teacher very much liked by his students. They liked that he had such a good knowledge of all parts of the huge subject biology

and that he also had the pedagogical skills to get the students to learn. Andreas had lots of interests apart from the biology he loved. Many times at different IBO gatherings Andreas showed us everything we wanted to know about the sexual life of spiders. He did it almost as a dance and with great skill and humor. His thesis was about spiders so he knew them well. I hope that Andreas will live in the memory of the first period of the IBO as I will always remember him as my friend from IBO.

— *Christina Broman*



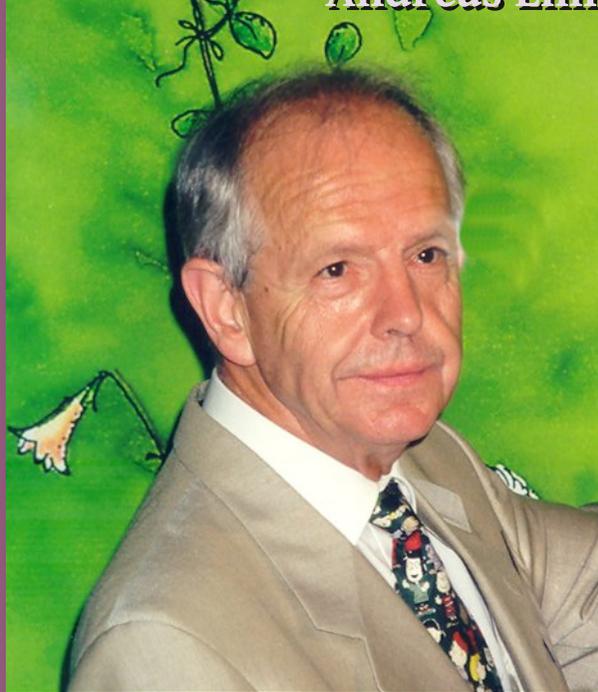
Jan Stoklasa



Andreas Ehn



Eckhard Lucius

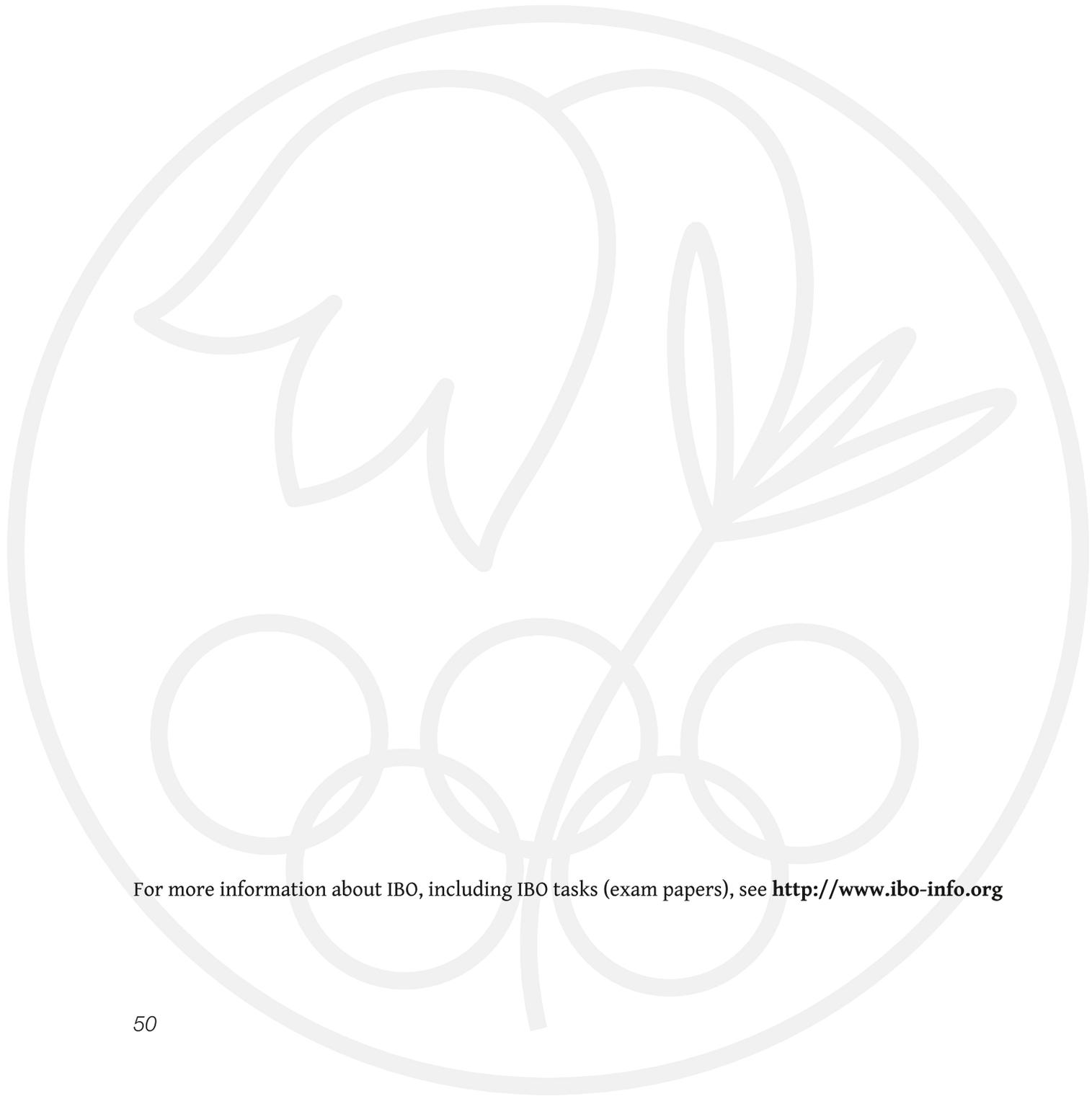


friendship among leaders

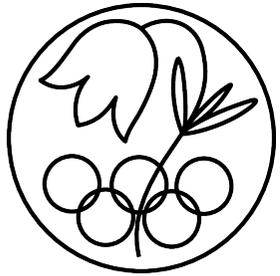


friendship among students





For more information about IBO, including IBO tasks (exam papers), see <http://www.ibo-info.org>



historical overview of
International Biology Olympiad
1990 – today

Czechoslovakia, 1990

The first IBO took place at the Faculty of Science, Palacký University in Olomouc, the first week of July 1990. Six countries participated: Czechoslovakia, Poland, the Soviet Union, the German Democratic Republic, Bulgaria and Belgium. Observers were present from The Netherlands, Sweden, Australia, Canada and Thailand. Also representatives from UNESCO and from the International Union of Biological Sciences (IUBS) attended and presented a speech in the opening ceremony.

Of course the most difficult problem for the host was the preparation of the competition itself and the biological and technical materials. The actual preparations started in January 1989 and lasted till June 1990. Not surprisingly, the main author of practical tasks was Dr Jan Stoklasa from the Department of Didactics, Faculty of Science, Charles University in Prague due to his great experiences in biology contests. He was selected to take the lead in preparing the tasks in collaboration with a team in Olomouc. The organisation was supported by staff from the Institute for Children and Youth belonging to the

Ministry of Education. The aim was to prepare a balanced competition in theory and practical skills, and for both parts to have approximately the same number of points.

In order to give an idea about what students could expect in the IBO tasks, in March 1990 a special Preparatory Text was sent out to all participating countries. This implied an indication of knowledge, skills and abilities students should have mastered in order to be successful in the 1st IBO. As an example, the task set of the 1982 Czech National Competition was distributed.

“The aim was to prepare a balanced competition in theory and practical skills”

To facilitate the evaluation of the tasks for members of the Jury, translations of the exams were available in all languages with the exception of Flemish. Nevertheless, checking the wording and



The very first IBO medal.

discussing the questions by the Jury was more time consuming than expected. And because in those times photocopying machines were not available, a lot of handwriting was necessary to make all the changes and corrections. For the two Flemish students the tests had to be completely rewritten by hand. This was a “crampy” job for the fingers, with so much handwriting and in the end was only finished in time with the help of the Dutch observers. But it was done without complaint, as everybody wanted to make the best of it.

The theoretical test consisted of three parts.

- T1 100 multiple choice questions with the focus upon reproducing and applying knowledge in relatively new situations for the competitors.
- T2 35 schematic figures were selected from various text-books used in the participating countries. The competitors were asked to indicate (in colour) the basic terms, location of organ systems, etc.
- T3 17 slides and 6 video recordings about biological phenomena, including animal

(birds) behavior were presented to the students, who had to draw correct conclusions about what they saw.

The practical task consisted of four parts. These took place not only in the laboratory. The ecological and entomological tasks were carried out in the faculty garden. Seedlings of 10 different plants in shelter and in sunlight had been prepared, in twelve different plots. Half of the competitors began with the ecological observations of these plots, while the other half solved the entomological part first.

- P1 10 plants had to be classified and identified according to their ecological characteristics and the influence of light, temperature and humidity. The effect of light on growth of the plants had to be interpreted.
- P2 Conclusions had to be drawn about the effect of light on structural differences between the plants, e.g. density of stomata per unit area of leaves.



opening and

closing ceremony



excursion to cloister

P3 The entomology task was a presentation of 17 insects, which had to be classified and identified according to their biotope. Conclusions had to be drawn about the adaptation of the insects to their mode of life, particularly with respect to the wings and their modifications and the oral organs. The latter had to be well prepared by dissection. Larvae and imagoes of different insects had to be matched.

P4 Analysis of owl (*Strix aluco*) disgorged pellets and determination of its nutrition involved the identification of skeletal remnants of mice and voles, followed by a calculation of the absolute and relative representation and mass of animal food of the owl.

Besides the tests, cultural, historical and nature excursions were included into the program. All were very much appreciated. This included a trip to a cloister where students were addressed by the cardinal who expressed his admiration for their performances. Of course, the botanical research laboratories of the Palacký University were visited too.

“Cultural, historical and nature excursions were included into the program. All were very much appreciated”

Some conclusions after the first IBO were:

- Organising a challenging and simultaneously fair IBO with high standard is possible.
- Students were happy and satisfied, not only with the tests, but with the IBO as a whole event.
- The number of tasks based upon recalling knowledge and focusing upon systematic botany and zoology should be reduced. A problem for the host was that the questions sent by individual countries were too classical with a focus on recall of knowledge.
- The discussion of the tasks by Jury took much more time than expected. This was partly due to the fact that discussions continuously took place in 6 different languages, which required repeated translations by interpreters. It was

concluded that mastering one of the two official IBO languages (English and Russian) would be in the future essential for the Jury members.

- On behalf of the observer group, UNESCO and IUBS representatives, it was suggested that an Advisory Board should be established.
- And last but not least:
- The Czechoslovakian organizers had done a great job. Thanks to their spirit and courage the 1st IBO became a striking success leading to confidence and perspective for the future.



before the test



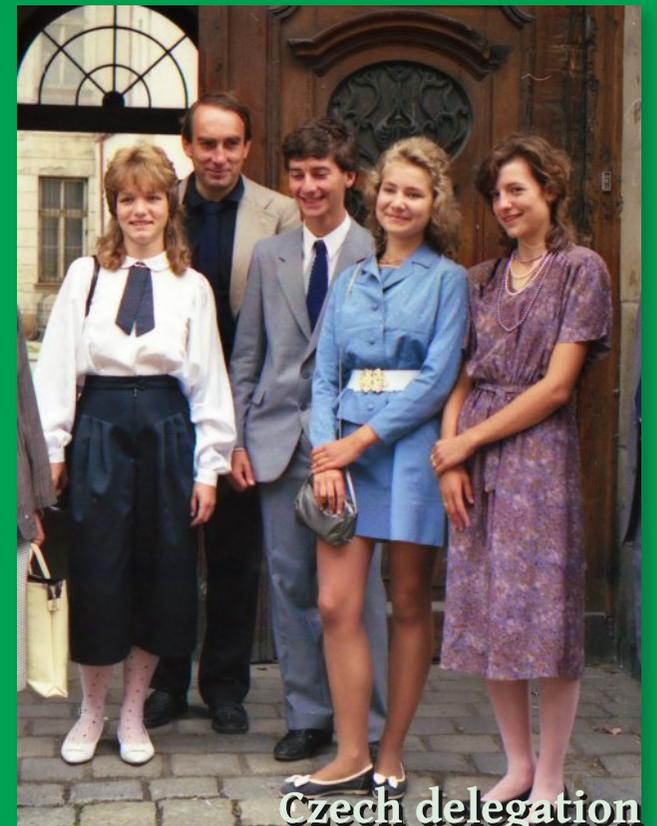
assigning seats



Jury inspection



doing lab work



Czech delegation

Russian Federation, 1991



Machatskala is the capital of the Russian federal republic Dagestan. Every delegation was welcomed at the Airport by friendly youngsters, dressed in local costumes. At the heart-warming welcome reception, tightrope walkers showed their skills and during the opening ceremony it was great to watch the performance of young Dagestan dancers.

The IBO-site was situated at the border of the Caspian Sea offering the advantage of swimming in this special Sea. But the water attracted also lots of mosquitos, which was less pleasant for human visitors. On the other hand, swallows (plenty of them nesting at the wall of the IBO Hotel) profited from these insects.

The Russian organisers expected at least 10 participating countries, but Australia, Canada and Sweden, being present in Olomouc as observer did not manage to come with a team. So two out of competition teams were invited, one from Dagestan and thanks to accidental (or perhaps incidental) contacts a team of the British School of Brussels. Finally, Greece was represented with two participating students, so altogether 42

contestants, and among them the Polish identical twins Marta and Jolanta Libura.

The Jury had a tough job in translating the theory paper. The questions sent in by all countries and used in the theory task required improvement and rewording, which was very time consuming. No photocopying machines were available, so everything had to be written by hand, including the tasks for the students. Sleep was minimal and even in bed the company of mosquitoes kept many awake. One of the theory questions offering a lot of points focussed upon features of Arachnida, a word not existing in Dutch language. In one of the four hand-written Dutch versions the term Arachnida was not translated. The student concerned had no idea what Arachnida was and decided during the test session to guess answers. The result of translation errors regrettably for this student meant few points and no medal.

One of the practical tasks focussed upon naming offered seeds of fruits. That may sound a simple task but not all students were aware that it was about edible fruit. It was frustrating for them that

during the meal, right after the test, tomatoes, cucumber, melon, oranges, cherries and apples were presented. They realised immediately: there were the seeds that they had just been looking at during their practical task.

The excursions were very enjoyable, including sailing on a barraged lake, with bare feet cooling in the water, going to the mountains, visiting a school, and climbing to the old citadel of Derbent, where one of the leaders suddenly was missing because he hilariously had locked in himself in the castle.

Notwithstanding the sometimes messy conditions and the modest quality of the tests, cooperation and willingness to make the best of it was a strong feature. This was expressed in speeches and toasts during the many festive meals. Andreas Ehn of Sweden held an inspiring address, comparing the IBO with a young swallow during its first flights, how it tries to fly and suddenly after great efforts, it raises high to the sky. He predicted that the IBO would fly high and become a widespread international competition.

At the farewell diner the leader of the Brussels team proclaimed: never before during a week had he slept so little, and never before had he been so badly attacked and bitten by mosquitoes. He had suffered cramp in his fingers due to writing all the tasks by hand for the examination papers for his team and while swimming in the Caspian Sea he had painfully broken his toe, but still his reflection on the IBO was very positive – a memorable and fantastic week.

The problem was where to host the IBO in 1992. No country volunteered to be the host. After some deliberations and negotiations, the Greek coordinator offered to do so. Everybody was happy and during the closing ceremony a specially prepared IBO trophy was presented to him.



The 1991 medal.



welcome at airport



cooling down



Derbent castle



mountain excursion



winning medal



Slovakia, 1992

The period in between 2nd and 3rd IBO was hectic but fruitful. It was concluded that some changes in competition structure were required. So during the Advisory Board Meeting in December 1991, a small working group worked for quite some time on developing and realising clear regulations, agreements about the scientific content of IBO, and the scope of responsibilities and duties of everybody. It was also considered that it is necessary to have somebody as official chairman and Hans Morélis of the Netherlands was appointed to this function.

Meanwhile a pressing challenge needed a rapid response. The Greek coordinator announced that hosting the IBO in 1992 was completely out of the question. Everybody panicked. Nobody was minded to skip the competition. All kinds of scenarios were discussed and communication about that was not easy, as email did not exist yet. More than welcomed was the proposal of the Czechoslovak Federation Republic to organize in July 1992, a low budget IBO in the Slovakian part of the country at Poprad, a small city near the High Tatra mountains. This was an ideal place for botanists and a good

opportunity for nature walks, which of course were included in the program. The excursions and lodging was simple, but nobody cared.

“Photocopying machines were available which made everybody happy”

The experienced IBO initiators Jan Stoklasa and Pavol Eliáš took the lead in developing the tasks, despite a very short time to prepare these. The practical task was especially elegant and included comparison of forest and grassland plants, study of fresh water organisms and a comparison of bio mass production and decomposition in two different ecosystems. All the delegations were involved in carrying out part of the marking of the students' test papers and that went very smoothly. It was a striking example of united cooperation and loyalty. Thanks to the sponsoring by Chemosvit company, photocopying machines were available which made everybody happy.

One particular issue deserves mention: a group from the private Fatih School in Istanbul participated with students, claiming to be the official Turkish team. But simultaneously, government authorities also arrived to participate at the IBO claiming to be the real Turkish officials. Even more surprising were the scores of the Turkish students: very high in theory, very low in the practical papers. Luckily the two groups communicated quite well and the situation settled down.



The 1992 medal.





The Netherlands, 1993

IBO 1993 was the first one to be held in Western Europe. The number of participating countries increased to 15. Utrecht University was the site where all test activities took place. All students were lodged in a youth hostel and they liked it.

At the opening ceremony the Russian-speaking delegates were surprised with a magic experiment resulting in a special welcome message. Meanwhile, outside a heavy thunderstorm took place, luckily causing no harm.

The practical tasks were very challenging, focusing upon investigations followed by drawing conclusions. A new phenomenon at the IBO, was a special training activity for students the evening before the practical task, so they had the opportunity to familiarise themselves with the equipment to be used during the practical tasks. They were also given some guidance to recognise special features of different type of nematodes, as one of the practical tasks focussed upon the reaction of nematodes to manure. Among the other topics included in the practical tasks was the effect of nitrogen fertilization upon the growth and

anatomy of maize.

For the theoretical tests optical readable answer sheets were used for the first time. These made the marking process very easy and offered the opportunity to perform a statistical analysis of the results. The data and analysis were included in the IBO 1993 report. The tests were pretty tough, but still very well discriminating. It was pleasing to see that there was a smaller number of questions which focussed just upon knowledge.

“The practical tasks were tough, really focusing upon investigations”

There was a great variety of excursions provided. In Burgers' Zoo students enjoyed tracking in a bush in a big dome containing an artificial tropical forest. They also practiced special enjoyable dances. Visits also included large agricultural and food companies, Rotterdam harbour, a dolphinarium and the beautiful botanical garden of

Utrecht University. Probably the most exciting was a sailing trip on the IJsselmeer and the most funny was the sneaky excursion arranged by a small group of male IBO leaders. While students had a party these IBO leaders announced their plan to go for a short walk. In reality they made a quick trip in Utrecht to the so-called red light district, where quite openly prostitutes residing on boats along the border of a canal can be observed in their hunt for customers. The site had become more or less famous as a touristic attraction. After showing up again from their trip, the concerned small group of leaders explained their absence in claiming that they just had gone for a short ethological observation tour focusing upon human behaviour.



The 1993 medal.

The most successful in IBO 1993 was the Australian team. It was a striking moment to see the tears of joy of the winner Anna Bown and the happiness of Andrew Walter, the leader of the Aussies.

The appreciation expressed by the International Jury at the end of IBO 1993 for such a wonderful event was due to the enormous support of the Utrecht Biology Student Association and Olga Kok, who was contracted as organiser. They all did a marvellous job and Olga summarised her experiences after the IBO as follows:

I have learned a lot this year. As a newcomer in an established structure, I had to find my position, define my tasks and prove my capability. Organizing this Olympiad also gave me the opportunity to cooperate with many different people, in very different skills and professions. I felt like a chameleon at times. At one moment you talk to an important sponsor, the next moment it's 4 a.m. and I'm behind a copier or addressing the crowd of participants, telling them that the bus will leave at 9.15 a.m. The week was crazy and I loved it.



welcome



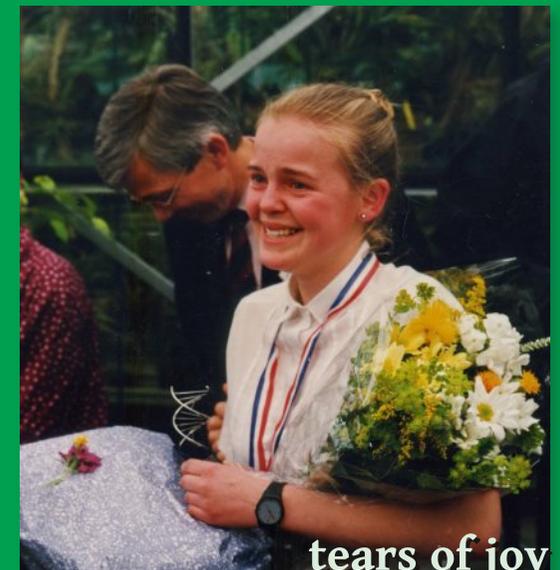
dancing



nature track



sailing



tears of joy

Bulgaria, 1994



All together 18 countries participated in the IBO in 1994. The Institute for Teaching Proficiency and Qualification provided all facilities at Varna, a well-located old town at the Black Sea coast. Delegation leaders were hosted at walking distance of the seaside, offering the opportunity to explore flora and fauna at the nearby beach.

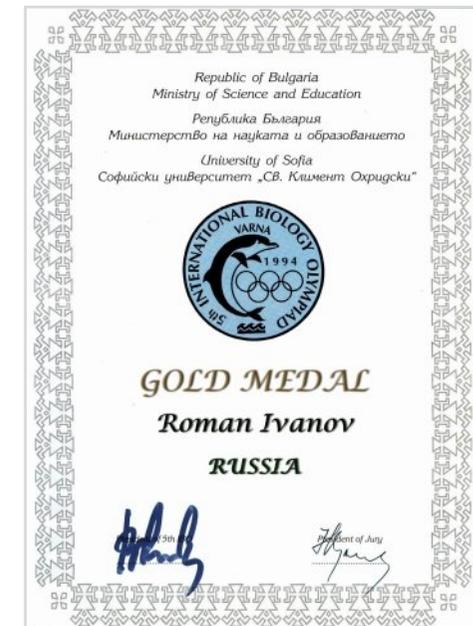
Several attractions were included in the program, such as visiting the Botanical garden of Balchik, the Aladja Monastery and the dolphinarium of Varna. A special day trip brought students and leaders to the Srebarna reservation at the estuary of the river Danube, where pelicans could be spotted from the terrace of the Nature Museum. The distance was big so provided binoculars were of great help. During this trip twice a tyre puncture occurred. Students who had been investing intensively in making friends welcomed this delay.

Due to financial problems it was decided that all countries had to pay a participation fee. But even this sum was not enough. Luckily for the Bulgarians, the private Fatih school of Istanbul provided extra support in money, prices and

computer assistance. In return this school was allowed to bring an out of competition team, but then, this resulted in an unpleasant consequence. A mistake in processing the results of this extra team in computer resulted in a disordered ranking and Jury was not involved in checking the results. Without Jury consultation, the medal award ceremony was started by the organisers and right from the beginning it was clear the ranking was not as it should have been, resulting in a messy situation. Luckily this was solved. In harmony everything was checked so students got the awards they deserved. It was a good lesson for the future, that the Jury should always check and double check awarded scores and final rankings.

It also became clear that a sound financial situation would be essential. After the IBO the organizers produced a clear report with an excellent evaluation of the test results, but showed that lack of money had affected the quality of the tests substantially. More than 40% of the theory questions were just recall or knowledge-based and at a too simple cognitive level. This led to some very high student scores and it was difficult to

discriminate between students. Notwithstanding these remarks it was clear that Bulgarian organizers, with just a very little budget, still were congratulated on this task of staging the IBO.



The 1994 certificate of the top gold winner.



welcome



botanical garden



beach findings



happy medal winners



twice a puncture



friendship



spotting pelicans

Thailand, 1995



In the foreword of the 6th IBO report we read:
The 6th IBO aimed to discover and encourage students who are specially gifted in biology, to foster friendly relations among the participating countries, and to create a forum for the exchange of information on school syllabi, activities and culture throughout the world.

In the 1995 IBO, hosted by Chulalongkorn University, Thailand succeeded in all these aims. That was no surprise as right from the start of IBO in 1990 the Thai leaders were very active in helping to improve IBO. In the IBO Advisory Board their leaders played a prominent role and already in 1990 they announced their willingness to be the IBO 1995 host. Indeed everything was well prepared in Bangkok so the 22 participating countries enjoyed a great and successful event.

The opening ceremony in the audience hall of Chulalongkorn University was graced by the presence of Her Royal Highness Princess Galyani Vadhana. She not only presented a magnificent opening speech but also a new beautiful trophy.

The translation of the tasks went smoothly, due to

the excellent quality of the questions. The Russian version was prepared beforehand by IBO experts Pavol Eliáš and Vítek Bičík who arrived one week earlier in order to make the necessary translations. A smart idea.

Bangkok is well known for its cultural beauties and of course all participants, leaders and students, took the opportunity to enjoy this extensively. Probably most impressive was the visit to the Grand Palace and most exciting was the short ecological tour to the Khao Yai National Park where a real jungle track was prepared. At remote areas in the park still some elephants and tigers could be spotted. So the nature track somehow was a thrilling adventure. Fear was not necessary due to the presence of armed guides. What in fact should be feared were the many present leeches so before starting off everybody had to take precautions in applying repellent cream on legs and shoes

During the closing ceremony, everybody sung with hands crossed together the beautiful old Scottish farewell song Auld Lang Syne, which gave a great feeling of togetherness.

The Thai organizers had prepared a small questionnaire as a tool to investigate the opinion of students and leaders about their IBO participation. The information obtained was to be used for better preparation and organization of future Olympiads. All aspects concerning board and lodging and the tests were judged as excellent. The results of the questionnaire showed that students through their participation in IBO were stimulated in their interest in biology, encouraged to demonstrate their talents and making friends with students of other countries. It was a fantastic compliment for the Thai organizers.



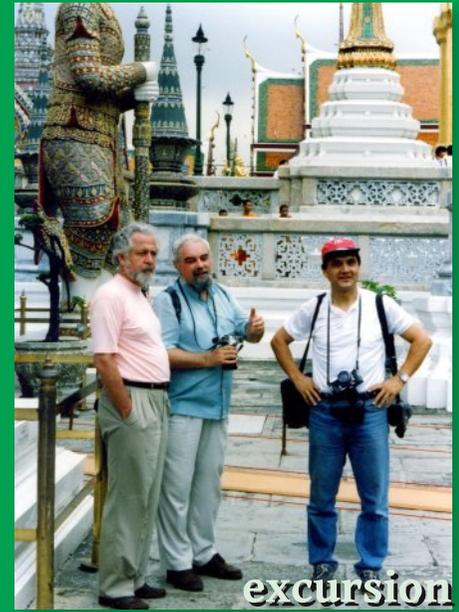
The 1995 medal.



the new Cup



cultural welcome



excursion



Khao Yai park



singing Auld Lang Syne



Ukraine, 1996

In 1996 most of the 23 countries participating in the IBO made a very special journey to the Pioneer Camp of Artek on the Krim the site of the IBO. Some countries, like Turkey arrived by boat over the Black Sea. The majority came by train. After flying to Kiev and staying there overnight, delegations assembled at the Railway station of Kiev on June 29th and from there a night train brought everybody to the Krim. Of course, this trip was an excellent opportunity to invest in making friends and so it happened. Throughout the whole train students and leaders enjoyed the group journey with good discussions, happiness, laughter, and even singing.

10 of the 23 participating countries had sent to the host organisers, questions to be used in the theory test. Altogether, with 20 questions per country, this resulted in a pile of 200 questions and they all were presented to the Jury. Of course this was too much, so a pretty vivid Jury discussion was required in order to reduce all questions to an acceptable number: one-third of all questions was skipped. For obvious reasons, this resulted in the recommendation to present in the future fewer

questions, but with a strong directive that quality should prevail.

The four practical tasks were about the following aspects:

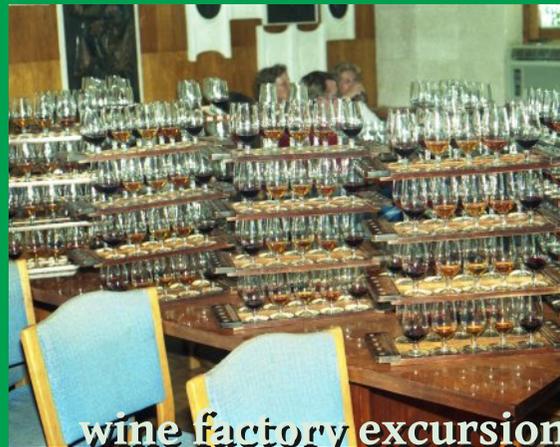
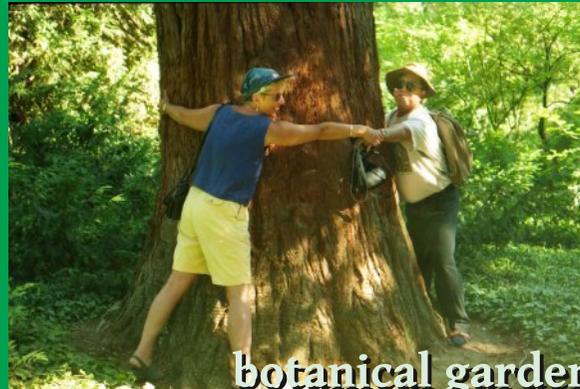
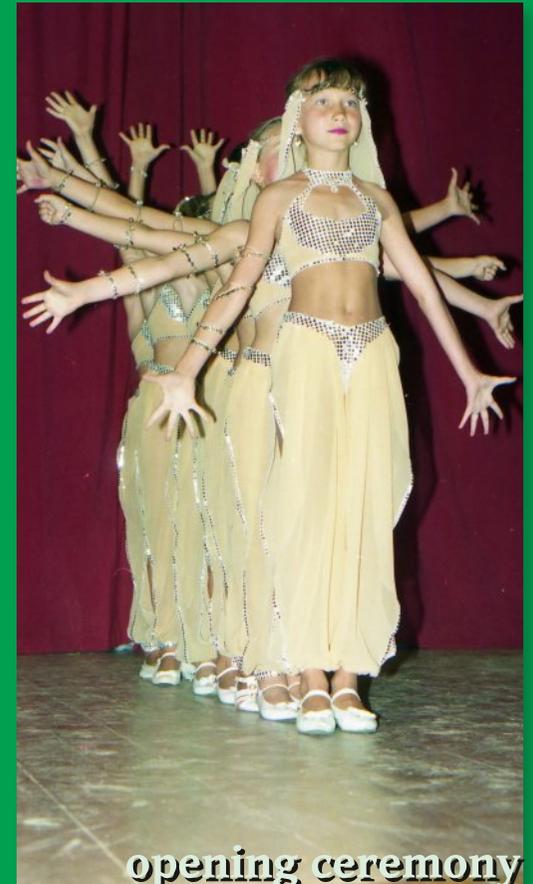
- Counting and comparing *Drosophila melanogaster* individuals and drawing conclusions about the statistical significance (chi-square) of the different phenotypes;
 - Conclusions, using a microscope, about the morphological features of histologic preparations of human glands sections;
 - Chromatographic separation and drawing conclusions about extracts of plant pigments;
 - Comparing and analysing the muscle structures of different squid using a 30X field microscope.
- All students were allowed to keep the field microscope as a souvenir of their participation in the IBO.

There were considerable discussions in the Jury room about the quality of the chromatograms prepared by the lab assistants and this resulted in the recommendation that preferably students should perform everything themselves without the

assistance (or interference) of others.

All delegations were regaled on interesting excursions. The Livadia palace was visited where in 1945 the famous Yalta Conference took place. The Nikitsky botanical garden with over 28,000 species offered much delight for the botanists. Artek has a subtropical climate and excellent opportunities to produce good quality wines. So leaders had to restrict themselves to not drinking too much during a wine tasting experience at Magarach wine making and viniculture research institute. In Sebastopol the dolphinarium was visited and everybody was challenged to climb to the top of the 596 m high Aju Dag nature park hill, which because of its shape is called the drinking bear.

The Pioneer Camp management, concerned about the physical condition of all students in the first days of the week, sent all students early to bed. As a kind of protest after the tests quite a big group of students went out at early night and slept, even in mixed gender, on the beach, which of course resulted in interesting conversations about cultural differences.



Livadia Palace

wine factory excursion

sleeping on the beach

botanical garden

opening ceremony



Turkmenistan, 1997

The situation during the IBO in 1997 was peculiar. The main organiser was a team from Istanbul Fatih College. This school had achieved the status of IBO coordinator on behalf of several west Asiatic countries where Turkish languages are spoken: Azerbaijan, Kazakhstan, Kirgizstan, Tajikistan, and Turkmenistan. During the IBO in 1996 Fatih College had a supportive role for the host in processing all the student results with computer. That sounds supportive but caused some questions to be raised as the countries represented by this College were rather high in the IBO 1996 ranking.

Contact by post and email with Ashgabat was not easy and during some time blocked. For a while, Belarus was primed to assume the role of IBO host, but after the recovery of email and postal communication, the green light for the IBO to be held in Turkmenistan was given. In hindsight and with the knowledge of 2014 we now can conclude that this green light was rather optimistic.

A Jury president skilled in leading the Jury discussions in English was not available until by surprise a lady, present by chance as interpreter,

took over and this worked out perfectly.

The tasks were not really challenging. The practical task consisted mainly about just watching an endless chain of slides with microscope and the assignment to recognize details, without any real experiments.

“More than ever the idea was favoured that fair play and honesty are of inestimable value”

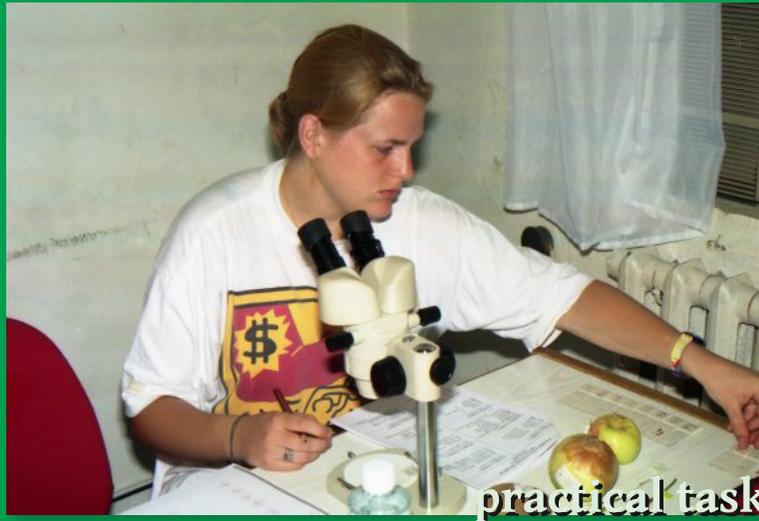
In the period before the IBO no strict separation had been maintained between the team responsible for producing the tasks and the team training the local students. This led to pre-knowledge of some students about tasks. This not only regarded the Turkmenian students but also the countries, which Istanbul Fatih College represented. These irregularities came to light and led inevitably to the disqualification of some students. It was tragic, but

also healing. Solidarity between IBO coordinators increased and more than ever the idea was favoured that fair play and honesty are of inestimable value.

The excursions were exceptionally interesting. An immensely big and modern cotton factory was visited, an enormous brand new mosque and the Dostuk Friendship Park, where all participants were welcomed by a double lane of youngsters chanting *halk, watan, turkmenbashi* (nation, fatherland, Turkmen leader). The adoration for the Turkmen president also was perceptible in another way. For the IBO a special trip by plane was arranged to the town of Turkmenbashi (named after the president, previously Krasnovodsk) at the Caspian Sea border. The one-hour flight turned out to be an enjoyable adventure. After the flight a city tour, boat trip and swimming party in the Caspian Sea brought lots of pleasure to all.



opening ceremony



practical task



Ashgabat main street



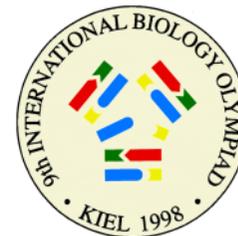
medal winners



excursion by plane



to Turkmenbashi



Germany, 1998

33 countries took part. Germans are famous for their organising talents and affirmed completely this reputation. All tests had been pretested beforehand with a group of former participants of the German NBO. These trials and the obtained feedback proved to be particularly valuable: all the tests were fantastic.

The opening ceremony in Kieler Castle was impressive and graced by a short but interesting lecture given by Nobel prize winner Erwin Neher about ion channels. The Parliamentary State Secretary gave a speech and showed he was a real politician, starting with the statement *the spoken word is valid* a lengthy monologue of 1420 words followed, a record which still holds in IBO history.

In practical tasks, students had to find relationships, plan experiments and use the time efficiently. In particular, one of the tasks about ethology was challenging. Each competitor was given a dish containing sand and sunflower seeds, which in using various grips and tools had to be transferred to another dish within a certain time span. Students had to analyse the effectiveness of

each method and to perform a statistical evaluation of their results.

Over time, the need for translating IBO tests by jury in native language induced quite some discussion. Would it be possible to only use English or Russian? For this reason in 2008 the German IBO host organised an extra short task session with questions only in English and Russian. More than half of all participants volunteered in this interesting pilot study. However the conclusion of this experiment was that a task in native language is fairer to all, so it would be unfair to stop with translating.

Besides the competition, of course, also some excursions were organised showing important amusing, cultural and natural aspects of Kiel and surroundings. The Molfsee Open Air Museum with old traditional houses and buildings, Hamburg Harbour and Zoo and the beautiful UNESCO heritage city Lübeck, were visited. For the ecologists, exploring bare-footed the tidal flatlands of the Wattenmeer National Park was delightful, notwithstanding the cold and windy weather

conditions.

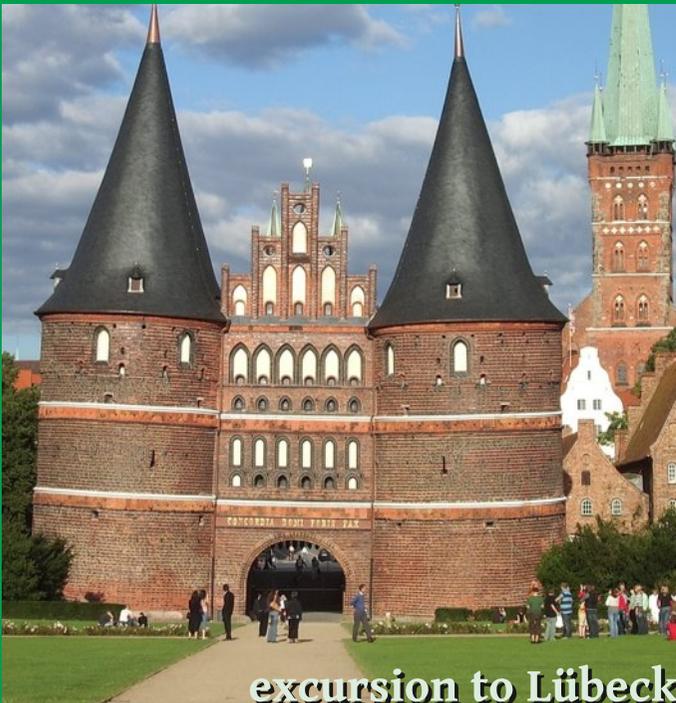
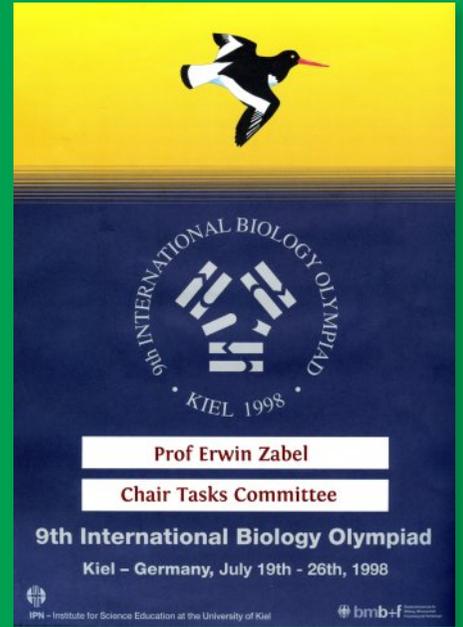
It was obvious that the 1998 IBO program was filled quite well. Even though all the tasks, discussion and expeditions were very well planned, it was also tiring for leaders and students. One student experienced a peculiar experience. During an excursion he fell asleep in the back of the coach. Leaving the coach fellow students did not notice him. So many hours later he woke up in complete darkness and all alone in the coach in a desolate coach house depot.

What IBO 1998 made so special was the extra attention for test design and test reliability, where assessment experts were deeply involved in creating and evaluating the tests. This not only resulted in excellent tasks, but also afterwards in an excellent IBO report.

This report is still interesting to read and reflect upon and not out-dated. It contains several valuable recommendations for designing reliable tests.



practical task



excursion to Lübeck



tidal flatland excursion



closing ceremony



Sweden, 1999

During the opening ceremony an old tradition held everyone's attention: singing together three choruses of the well-known student song *Gaudeamus igitur*. Fittingly, the motto for this Olympiad was *In the footsteps of Linnaeus*, as Uppsala is the town where the famous biologist Linnaeus spent a long time of his life. For this reason, during the opening ceremony a special stage play act was dedicated to Linnaeus, which later in the week was followed by a performance in the garden of Linnaeus and visit to Hammarby estate, the place where Linnaeus lived.

What IBO 1999 made special was the presence of so many volunteers, originating from biology education. The Swedish Teachers' organisation did a lot of work and all members of the Scientific task committee were actively teaching and that gave the scientific content and the task preparation a great advantage.

The questions in the theoretical test were not primarily based upon knowledge presented in books like Campbell. Quite a lot of the questions were based upon the model of offering some

biological information, followed by a set of questions checking whether the students understood the given information. In the practical task the competitors were asked to choose between alternative designs of an experiment and also to interpret correctly their own experiment results. Lab 4 was an ingenious experiment about guppies where students had to register the behaviour of male and female guppies and to draw conclusions about their observations. A really stimulating set of tasks!

Of course the IBO participants had the opportunity to enjoy some of Sweden's rich culture. In the capital, Stockholm, a sightseeing bus trip was arranged together with a walk through the city and visiting famous places like the Wasa Museum and Skansen Zoo and Open Air Museum. Other interesting activities were a field excursion to the archipelago along the Baltic Sea coast and after the closing ceremony, a boat trip to Skokloster castle. At this beautiful environs was the farewell dinner, preceded by an exciting open-air knight tournament. During the closing ceremony itself Dr Tomáš Soukup of the IBO Coordinating Centre

congratulated the Swedish organisers on their successful IBO. Besides this he dedicated some words to the 10th anniversary of the IBO: *we hope that the next ten IBOs will be as successful as the first ten. In paraphrase to nice words earlier spoken in IBO by Andreas Ehn:*

We wish IBO to soar high as an eagle, to stay firmly established among biological competitions as an elephant on the ground, to live as long as a tortoise and to be as widespread as spiders, the beloved creatures of Andreas Ehn.

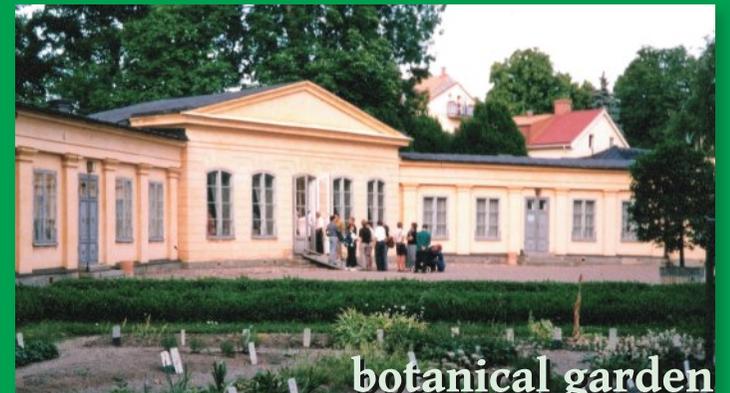
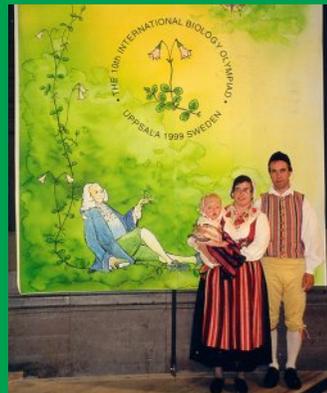
Soon after this IBO, a bizarre incident took place, when both the IBO Coordinating Centre and the Swedish organisers were tormented by the parents of a silver medal winner. According to them, their son deserved a gold medal and they tried to realise this tenaciously by all means including sending letters, emails, threats and after that bribery in offering money. Of course this all was to no avail.



Linnaeus himself



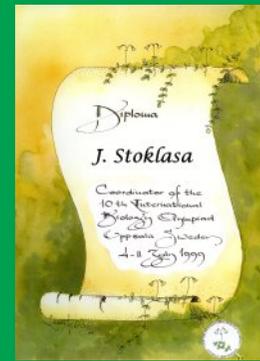
performance by Linnaeus



botanical garden



certificates



Skokloster



Turkey, 2000

IBO 2000 was organized by TUBITAK, the Turkish Scientific and Technical Research Council, with universities of Ankara and Izmir in a leading role for the preparation of the tasks. As location was chosen for Antalya, because of the pleasant nearby Belek location with nice resorts near the sea side. 38 countries were participating and everybody indeed enjoyed the beautiful circumstances. Nice swimming pools, excellent food, pleasant beaches with turtles in the sea and their nests in the sand on the beach. Antalya is situated in Anatolia, which over a long period in history has been a gateway to three continents and a cradle for great civilisations, so a rich variety of cultures can be observed. Excursions were organized for IBO to the cultural-historical Museum of Antalya, and the interesting remains of the old Greek city of Perge and the quite intact antique theatre of Aspendos.

But most important of course were the tasks, which thanks to the help of Olga Waxman and Alex Friedmann were available in impeccable Russian. Having the tasks in two different languages is an advantage. It helps to have a better grip upon what exactly is meant in the questions and how the

wording should be.

Some aspects included in the practical tasks were:

- Grouping and interpretations of several different plants using a key
- Study of body structure and behaviour of water fleas
- Constructing a phylogenetic tree of 7 insect species based upon microscopic observations and dissections
- Gel-electrophoresis of DNA and stain samples
- Determination of community structures in different soil horizons

The experiment with the gels turned out to be thrilling because of the weather conditions. Outside temperature was extremely high, and due to this during transport from production site to exam location the gels started to melt. But finally everything was under control, except for one simple but not unimportant detail. Test were designed without separate answer sheets so students had to write their answer in between the lines in the tasks itself. This is uneasy for marking causing delay, and even worse was the necessity of

copying much more paper than was usual.

The theory test turned out to be slightly more difficult than the practical tasks. For this reason the local organizing committee suggested not to stick to the 50 – 50 balance for theory and practice. This was accepted by Jury without discussion or voting. But after the closing ceremony it became clear that due to this decision a Turkish student got a gold medal instead of silver and for a German student it was the other way around. Of course the German delegation was not amused and some months later it brought up in the IBO Advisory Board an intense discussion about fair and honest balancing of scores.

The final conclusion was that a correct balancing only is possible if all raw scores are standardized by applying a correction for differences in average scores and standard deviations, resulting in so-called T-scores, as already was suggested by the Swedish organizers in 1999. This was accepted so since 2000 in IBO the final ranking of the students officially is based upon T-scores.



turtle nest



Jury inspection



Greek city of Perge



practical task specimen



Aspendos

Belgium, 2001

In the preparations for IBO 2001 an important decision was the organisation of a press conference, May 2001. In this conference, which had been set up especially for the IBO, as slogan was presented: *a society that does not encourage scientific research is a poor society.*

This worked quite well. Governmental representatives had the opportunity to highlight their projects aiming to stimulate youngsters in studying science. On the other hand, it set the Biology Olympiad in a broader perspective. Due to this press conference strong press contacts were obtained, covering the Olympiad during the IBO itself, plus a one-hour radio interview. The IBO organisers managed to establish a patronage committee, chaired by His Royal Highness, Prince Laurent of Belgium.

The IBO itself was a very smooth event. A special occurrence was the arrival on Sunday of one of the Dutch leaders, who pedalled by bike to Brussels. He covered the 200 km from his hometown to Brussels in very challenging weather conditions (rain and a strong headwind, at an average speed of 19 km/hr).

Old IBO friends, Dr Michel Asperges and Dr Patrick Reygel, who in 1989 were present in the inaugural IBO meeting in Brno, were volunteering in the practical tasks as supervisor. These tasks included:

- Identification and taxonomic classification of plants based upon making sections;
- Reverse phase thin-layer chromatography of photosynthetic pigments;
- Cockroach dissection;
- A set of questions about the behaviour of insects, birds and mammals.

This last ethology unit was based upon video recordings.

An interesting inquiry held in 1998 was repeated. Students on a voluntary basis took a small test specially prepared for them in the English Language. The aim was to check the influence of the question language on students' results. It was not really possible to draw conclusions. Both proponents and adversaries found arguments in the results.

As is usual in IBO students and leaders were presented interesting excursions, showing

wonderful Belgium locations and features. Among them the Atomium in Brussels, the cultural historic city of Bruges, Antwerp Zoo, a nature reserve at Zwin, the National Botanical Garden in Boechout Castle, and the Haute Fagnes (peat fields).

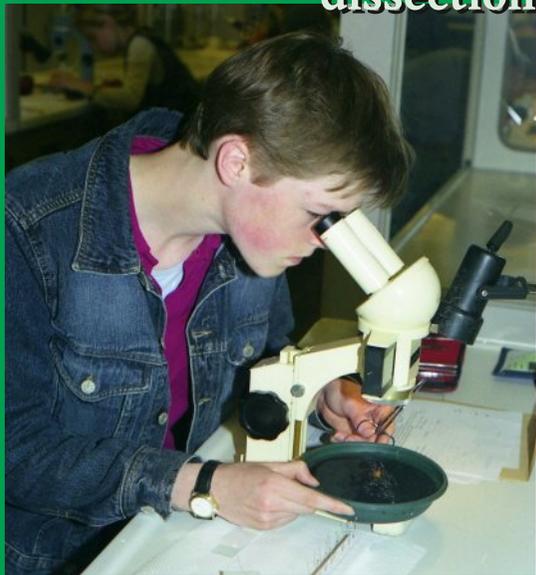
During the closing ceremony, His Royal Highness Prince Laurent passed on the IBO trophy to the IBO 2002 organiser. In this solemn meeting, a spontaneous word of gratitude was expressed by one of the competitors, Christian Schuepp of Switzerland. He ended this much appreciated initiative with the meaningful words: *we should stay in contact and work on a better world, through biology, the most responsible science for rebalance nature on this planet.*

The farewell party was in the famous Royal Natural Science Museum with so many fascinating and excellent dinosaur skeletons on display and two sympathetic IBO friends leading the education department: Dr Gérard Cobut and Dr Hugo Vandendries. They were the stimulating motor behind everything in IBO 2001.

reverse phase chromatography



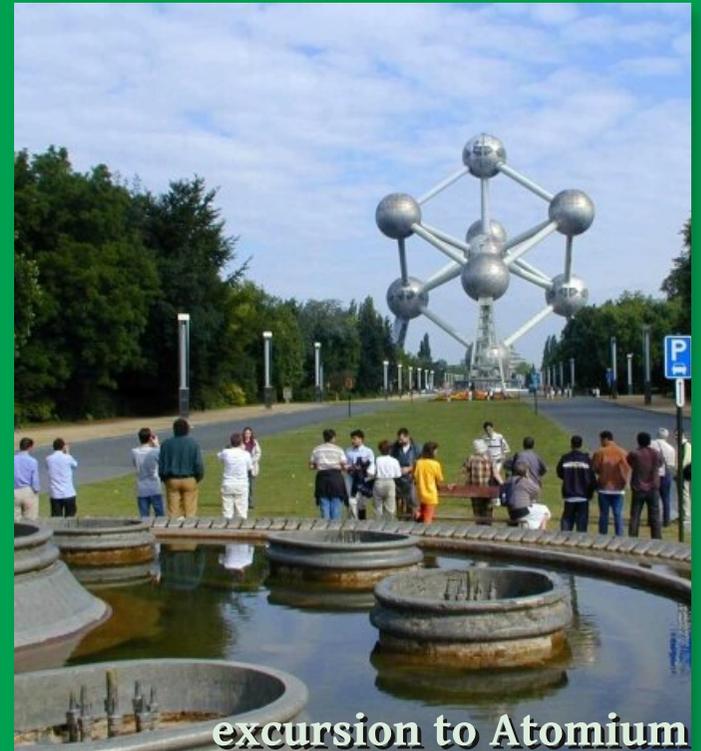
arrival by bike
dissection



peat fields



beach at Zwin



excursion to Atomium



Latvia, 2002

For a small country like Latvia, with only a population of about 2 million people, organising the IBO was real a national issue with the national government and the Ministry of Education and Science taking part in the organisation. It meant that during transportation, there was always a police escort present to secure a smooth transportation. For the scientific part, the Biology Teachers Association, together with the universities assumed the responsibility of developing tasks. And for supporting all activities, helping to copy and to distribute all the tasks, many family members of the organising committee were mobilised. Students and leaders were hosted at different locations in Jurmala, Latvia's best-known beach resort, near the capital, Riga.

During the opening ceremony a peculiar situation arose during the oath for the students. UK student David Wyatt was asked to pronounce the words. David, not knowing the exact text presumed he would get it when entering the stage, which was not the case as the organisers presumed David would know the wording. So for a while an awkward silence arose. But David firmly saved the

situation in phrasing what according to him would be appropriate with something like: *we students will do our best and act fairly in all aspects of this IBO*. Well done by David and later that week he achieved a wonderful reward as he ended up with a gold medal and top position as the second highest in the final ranking.

Aspects included in the practical tasks were:

- The investigation of the fauna in fresh water lake samples and characterisation of benthos, organisms at the surface and in between;
- Provided plant samples, had to be identified, and, using a key, classified in the correct families and compared with help of produced cross-sections;
- A dendro-ecology task about the growth over years of aspen invading an open area was ingenious and required measuring diameters and tree rings, producing a linear regression line through points in a graph, matching with obtained data, and drawing conclusions about intraspecific competition.

Of course everybody got the opportunity to enjoy

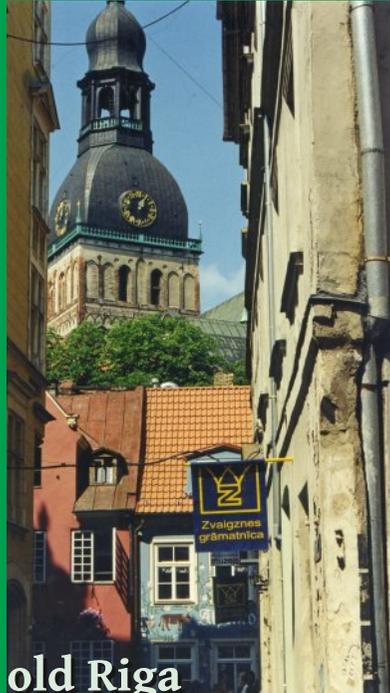
Latvian sightseeing specialties like the old part of Riga, several palaces, interesting nature parks and Jurmala beach.

The start of the medal presentation during the closing ceremony was funny and moving. The Minister of Education had agreed to hand over the medals. The first student to call on the stage was a girl of Argentina, who had not at all expected to be in the medal range. She was so happy surprised that she ran to the stage, dashed to the Minister and embraced him. The Minister was embarrassed but also pleased by so much enthusiasm. And at the end of this session he was treated to a second show of enthusiasm, as David Wyatt was so happy with his 2nd best gold medal that he kept shaking the hand of the Minister!

The farewell dinner was at Krasta Lido, where all participants could eat from one immense big Guinness Book of Records cake decorated with a huge picture of the IBO 2002 logo.



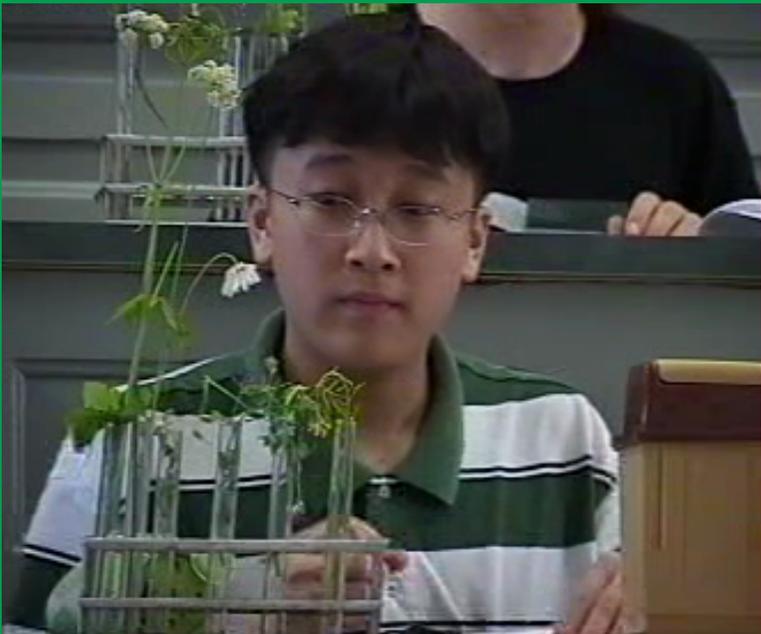
Gauji National Park



old Riga



Kemeru Nature Park



practical tasks



medal ceremony

Belarus, 2003



This IBO with 41 participating countries was in the geographical centre of Europe, Belorussia, in the capital Minsk. The arrival at the airport was lovely. Delegations were welcomed with songs, dances and, in line with an old Belorussian tradition, special salted bread. During the opening ceremony, all participants were welcome and addressed with an uplifting speech by Belorussian president Lukashenko.

The well-known and experienced Belorussian IBO leaders, Galina Romanovets and Natalia Maximova, had managed to schedule one day extra in the programme. That prevented some challenging situations and allowed some relaxation for the Jury and students. All the tests had been screened thoroughly by test experts and that was evident in the quality of the questions. This meant that discussions in the Jury room went smoothly, without much deliberation about the answer keys, and the number of 'skipped' questions was low. Following the examinations, the excellent evaluation showed that these papers were very discriminating, important in this sort of competition.

“All the tests had been screened thoroughly by test experts and that was evident in the quality of the questions”

The practical tasks were very varied, well formulated and with real investigations. Included topics were:

- Determining angiosperm flower structures;
- Detaching crayfish extremities and determine their functions;
- Identification of microorganisms (bacteria) with help of special reactions (like Gram);
- Genetic analysis of inheritance, using seeds of common beans.

One of the West European students during the practical task became unwell. It turned out this was due to homesickness so he returned home immediately. It was just an incident. All the

students and leaders appreciated the tests, excursions, parties... in one word: everything.

The excursions brought fun and pleasure for students and leaders. Thanks to the extra day there was time to visit a marshland, a nature reserve, having a barbecue in a forest and enjoying the recreational Naroch Lake.

Regrettably, one student was disqualified due to looking to the answers in the exam papers of neighbouring students. The student even stood up several times in order to see more clearly how other students were responding. Despite the evidence being clear and convincing, his team leaders complained furiously, showing that *fair play* in some cultures has a different meaning.



organizers



happy leaders



welcome bread



creative activity



medal winners





Australia, 2004

Maybe it was the strict custom conditions or the sudden large increase of the participation fee, but the number of countries coming to Australia was one less than in 2003. That was a pity as the first IBO at the southern hemisphere in a country with many special species of course was extraordinary.

During the opening ceremony, a spectacular theatrical performance was presented, symbolising the development, culture and biodiversity of Australia. During the IBO week this biodiversity also could be enjoyed during many excursions. A visit to Steve Irwin's Zoo resulted in students coming in close proximity with a baby crocodile, koala bear, dingoes and a big python. Other opportunities to experience Australian unique flora, fauna and culture were a sheep shearing demonstration followed by a hearty Australian barbecue dinner with classical Australian songs and bush dancing, visits to Kurrawa Golden sand beach and the Spring Book National park. Also worth mentioning was the reception in Brisbane City Hall and a boat cruise on the Brisbane river.

Don't think IBO 2004 was only focusing upon social

and cultural activities. Most important of course were the competition and the tests. The Aussies, to prevent any cheating, had strict regulations in place. Everyone leaving the Jury Room was escorted and it also was requested that all Jury members were to hand in their mobile phones. Surprisingly, the theory test completely was multiple-choice, with an enormous number of questions, requiring extra translation time. This 'wait time' resulted in some creative and artistic licence when Jury members collaborated in putting together a version of the famous Australian Waltzing Matilda song.

The practical tasks were well prepared, thought-provoking and varied. These included:

- Measuring enzyme activity with help of a spectrophotometer;
- Two-dimensional gel electrophoreses;
- Dissection of the mouth parts of a grasshopper;
- Plant responses to nitrogen nutrition;
- Interaction between two aquatic plants.

While translating these tasks Jury had the opportunity to inspect all materials to be used in

the tasks. As usual a 'shift' system was applied and the organisers introduced a smart idea. Each of the four shifts had their own nice coloured lab coat: yellow, red, green and blue. Since 2005 this system has been copied in all following IBOs.

The Jury Room Song to the tune of Waltzing Matilda

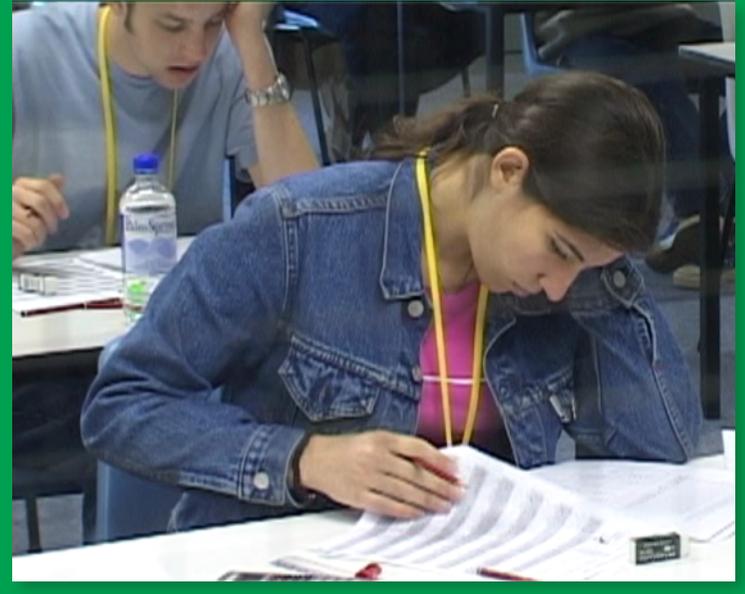
*Down in the jury room
Questions flying everywhere
All of the jury are ploughing away
None of the students really have an inkling
Of all the work we do every day
We are the jury, we are the jury
We should get medals too, that's what we say
But the profs and the students
Keep us working mercilessly
And what is more it's all done for no pay
One day we will try to make it easier
Skip all the questions
And throw them away
Or let Singapore do all the translations
As every session they're always first away*



opening ceremony



examiners



woolshed



harbour view



Brisbane City Hall



China, 2005

Peking University (PKU) and its College of Life Sciences was host for 50 countries in 2005 in China. Everybody expected a great event and that came true. There were three different movie teams recording everything. One particular student had bad luck. On arrival and filling out his official student declaration form he discovered that his 3rd IBO participation was not in accordance with the rules, which was a pity for him. He was not immediately disqualified, allowed to follow the student program but not able to be awarded a medal. In the event, he took the tests, and was informed about his scores, but was deleted from the ranking.

The IBO 2005 logo shows a leaf of a well-known living fossil tree, the ginkgo. So, many countries expected questions about the ginkgo and prepared their students for IBO through special training about ginkgo. That was in vain. Of course experiments with plants were in the practical tasks, e.g.

- Distinguishing C3-, C4- and CAM-plants by microscopic observation;
- Karyotype analysis of root tips;

- Characterisation of a plant based upon observations;
 - Investigation of the light absorbance of different plant pigments.
- But unmistakably no ginkgo.

The theoretical test again consisted of only multiple-choice questions. For organisers this makes marking easy, but not everybody was pleased as just using these sorts of question could reduce the reliability of the results. So it was advised to include in the future matching questions, true/false statements and numerals in the case of calculations. There was some extra discussion time for the Jury to solve the problem of the two available versions of the tests. The Russian and English language versions were not quite identical. The skilled and sympathetic Jury president Jindong handled everything competently.

The excursions were breath taking. The huge Forbidden City with seven great temples, one after another, was impressive. A cruise on a dragon boat on the lake in front of the Summer Palace, offered

beautiful vistas. One of the evenings the students had a party in a lovely Ethnic Cultural Park. Of course, the competitors were invited to come to the stage and demonstrate their dancing and singing skills, which was hilarious at times and enjoyed by all. Big vases with water and small beakers were suddenly provided and that was the start of a great water throwing festival.

Students and leaders were tested on their physical condition, while climbing up and down the Great Wall. Chinese food is famous and eating Peking duck with chop-sticks was on the menu in a special chosen restaurant. Exotic delicacies could be admired and tasted in Wang Fujing, a shopping promenade with food stalls selling fried grasshoppers, mealworms, scorpions, baked snake and sea urchins.

Prof. Víték Bičík, one of the IBO founders, said goodbye to the IBO in Peking. During the closing ceremony he was honoured with a farewell gift. All together he attended 15 IBOs. It was a striking moment.



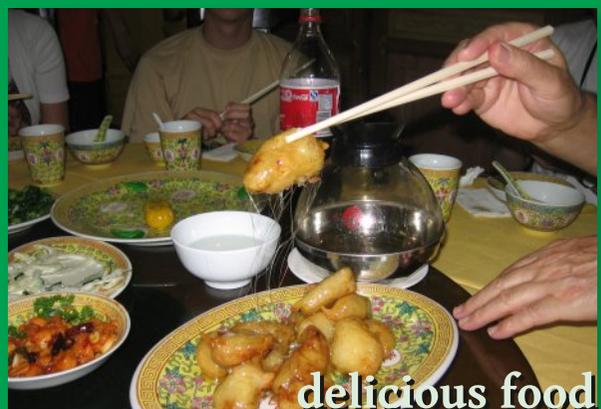
opening ceremony



Forbidden City



students having fun



delicious food



at the Great Wall



dragon boat cruise



water throwing festival



Argentina, 2006

The first IBO in the western hemisphere was July 2006 in Argentina. 48 countries travelled to Rio Cuarto, where the National University (UNRC) played a leading role in organising everything. The motto devised by the organisers was: *may the bonds of friendship be stronger in time and may we learn to feel our world as everybody's home.*

The symbol for the IBO was the armadillo (*Dasypos yepesi*), in Spanish mulita an interesting Argentinian endemic animal, which of course also admired during one of the excursions.

Rio Cuarto is a relatively small town, so providing accommodation for everybody was not that easy. It became problematic as one country requested extra lodging facilities for the parents of their students. That appeared at first to be strange and it became clear that this particular wish was based upon the fact that, according to their religion, young non-adult females are not allowed to travel without accompanying adult relatives. It was a tricky situation as even arguments like discrimination of religion were used and it was an uncomfortable time. In the end, the issue was

settled, but since then it has been a rule that in the IBO, political and religious issues and arguments are absolutely banned.

The IBO opening ceremony was just after the world championship soccer where Italy won and Argentina missed the final. In his speech the IBO chairman advocated that IBO as world championship in biology was much better: Italy as observer and Argentina in the leading role. He stressed fair play: avoid the yellow card, go for the green card of friendship.

The discussion about the theoretical test was a kind of competition to skip as few questions as possible and with success. Only 3% were skipped, a new record. The practical tasks included experiments about plant taxons, dissection and adaptive radiation of bivalves, spectrometric determination of glucose oxidase activity and classification of bacteria with help of Gramm staining.

The marking and scoring of the tests took extra time as the original all-or-nothing strategy for each questions was not accepted by Jury and altered into

a more gradual scale.

There were many specifically Argentinian features with musical performances, a reception at the town hall, an excursion to an environmental park, a special for the IBO organised tango workshop, and a Gaucho Day. During that day everybody could watch and exercise native dances, feast upon a typical Argentinian lunch and spectacular asado (barbecue) and enjoy a show of skilful horsemen.

As usual the closing ceremony was an unforgettable experience for young and old. It was moving to observe the happiness of so many youngsters.

Top gold number 1 was completely bewildered and that was so charming that it resulted in a big hug from our beloved IBO colleague Dr Gladys de Moro, chair of the organising committee.

During the farewell dinner all participants received as souvenir a mulita carved in onyx marble. The Argentinians were overwhelmed with compliments for their excellent work. They were a fantastic team.



opening ceremony



asado



tango demonstration



a fantastic team



Gladys



environmental park



gaucho day

Canada, 2007



IBO 2007 was hosted in Canada in the city of Saskatoon at the University of Saskatchewan, celebrating its centennial, with support from the Saskatchewan Institute of Applied Science and Technology (SIASST). A new initiative was the photo session before the opening ceremony. All 49 teams were pictured with their flags, together with a Canadian Mountie in full dress uniform. Liechtenstein, a very small state neighbouring Switzerland in Europe (36,000 citizens), was present with just one student participant. Of course, he received a special and hearty welcome.

Practical tasks included:

- Dissection and identification of annelids.
- Dissection of a seed and a flower, identification of plant structures and organs and identification of flowering plants (with interesting use of a power-point presentation in this task).
- Thiocyanate analysis in cauliflower using a spectrophotometer.
- Sequence confirmation of a cDNA and genetic control of seed coat colour and seed shape in beans.

In Saskatoon a relatively small but dedicated group of organisers and volunteers did all the work. Small is beautiful, but can be hard if there is too much work to do. Due to some understaffing it was not easy to cope with some unlucky events: lack of student guides; the quality of questions submitted by participating countries and absence of skilled statisticians all led to little time to improve questions. Consequently, many questions were eventually omitted from the papers. The sudden complete breakdown of a PC holding the final version of all corrected results could have been catastrophic, happening only half a day before the closing ceremony. Christiane Muehle, former Olympiad participant, successfully restored the data files in the middle of the night.

The social activities of IBO 2007 were remarkably successful. Most memorable for students was the visit to Wanuskewin Heritage Site, where a cultural show was presented by Indians and even more exciting: the night was spent by students in real tipi wigwams.

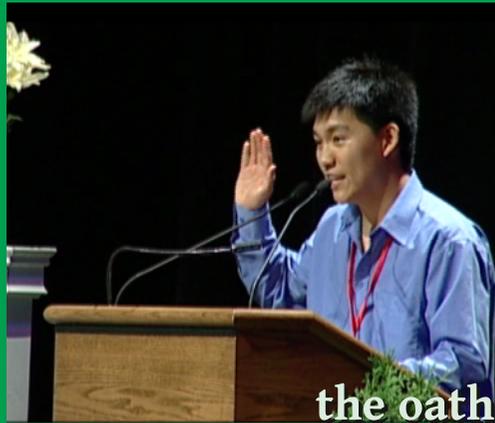
For the Jury, *taste of Saskatchewan*, Saskatoon's annual food festival, was a "delicious" gustatory experience. Near the riverbank, the event showed the wide variety of local special and unique dishes. And this all accompanied by live vocal, drama, and dance entertainment.

IBO 2007 became an absolute success, but it was obvious that the whole organisation was an exhausting and stressful adventure for the relatively small Saskatoon staff. Based upon their experiences, Chary Rangacharyulu, IBO 2007 coordinator, together with his colleagues produced a very valuable report with many useful recommendations for future organisers. This IBO 2007 report still is an interesting document worth to consult.

The evaluation of IBO 2007 showed that it would be useful to have a pre-check of all IBO questions by a group of assessment experts with an IBO background. This proposal was accepted and effectuated in IBO 2009.



Liechtenstein



the oath



archery



meeting the Indians



Quotes from IBO 2007

Students

I remember sitting around the fire Wanuskewin taking turns singing campfire signs in different languages and thinking “Wow.”

I was deeply impressed by Wanuskewin Heritage Site and enjoyed the time we spent there tremendously, the cultural programme and nature: We observed beavers in the river at sunset, the wild flowers and not least the birds were impressive in the atmosphere of serene tranquility...

IBO really shows that there is not much difference between people all over the world in the sense that people everywhere are hard working and fun individuals. Holding a grudge or being prejudiced against a certain group is pointless because there are good and bad in every group. Especially dancing to music from all over the world gave me a sense of unity. It didn't matter that we didn't understand the lyrics or didn't know about the dance of that culture we were all out there just to have fun.

I remember the excitement, and the pride, I felt when my team members were called to receive their medals.

I remember the difference between awkward, tentative hellos on Sunday and emotional, heartfelt good-byes a week later.

I met many people from many countries and I believe that that was the part I enjoyed most in the IBO.

Yan Yu

silver medallist and proclaiming the oath during opening ceremony

The IBO has made me aware that, although we live in different parts of the world, with different customs and traditions, perhaps we are not as different as we seem in terms of the academic world. Academics, especially the sciences, is one of the things that can unite the world together. It was a great feeling to finally be able to share (albeit lame) bio-jokes with fellow bio-nerds from around the world and not be considered weird (the response I get from most other people in Canada).

It wasn't just bio that was similar between us, either. I found new friends who shared similar languages, sports/hobbies, even liked the same music (a girl from Azerbaijan loves linkin park, and so do I!)

That said, the IBO did make me truly aware, for the first time, that the world does not just consist of my Canadian-Chinese heritage/ customs/ culture. It was definitely an eyeopening experience to see people from countries I've never even heard of (like Liechtenstein, for instance). It was just a great experience, culturally as well as academically.

Leaders

I have participated in IBO since 2005. These years have given an opportunity to build up very good relationships with many colleagues from different countries. And has provided an excellent possibility to get know more about very different countries, nations, cultures. Some very good personal contacts I built up in IBO have made possible to make many proposals to improve the education system in my home country.

I was impacted in such a profound way, as I think the IBO was the most influential professional development for any teacher to experience. It showed how passionate people are to showcase how important biology is to young, keen students.

India, 2008



The Homi Bhabha Centre for Science Education (HBCSE) is the nodal centre of India for Olympiad programmes in mathematics and sciences. Their staff, led by Prof. Arvind Kumar, Prof. Vijay Singh and Dr Rekha Vartak had acquired a lot of experience in organising and coordinating activities for talented students. In 2001 HBCSE was the host organisation for the International Chemistry Olympiad and it was evident that HBCSE also played a major role in IBO 2008. All exams, taken by 220 students of 56 countries, were in the HBCSE building.

After IBO 2007 it was quite clear that the design and composition of a proper IBO task is tough and needed extra attention. So a special document with considerations and recommendations in relation to designing a reliable IBO test was produced. The Indian task committee took heed of this recommendation. The tasks and test questions were produced carefully and beforehand scrutinised by assessment experts. Due to this thorough preparation, the quality was excellent. The number of questions just about knowledge and the number of questions skipped by Jury was the

lowest ever. Jury meetings went smoothly as our well-known and popular colleague Prof. Anindya Sinha, (known to his friends as Rana), was a pleasant and skilful Jury president.

The practical tasks were elegant and original masterpieces. These included:

- Colorimetric determination of factors affecting B-lactamase activity. This task turned out to be exceptional difficult (average student score only 22%). Still the discriminating power of this task was fine.
- Study of skeletal systems (skull, vertebral column and limb bones). In this task, skeletons of fictitious animal species were used, which specially were prepared for IBO by an artist.
- Responses of animals when exposed to different stimuli. Students had to watch several videos showing animal behaviour of fruit fly (*Drosophila melanogaster*) larvae and the Siamese fighting fish (*Betta splendens*). Then students had to draw conclusions and make predictions. Each had his own laptop for watching the video. That was smart, because part of the test required students to use available time

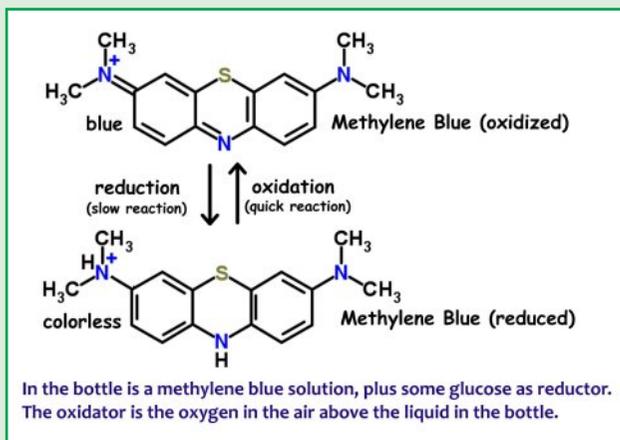
efficiently in watching the video and answering the questions.

India is a country with a rich culture and it is obvious that IBO participants got the opportunity to enjoy this. During the opening and closing ceremonies various beautiful music and dance performances were presented. A city tour through Mumbai showed features such as Dhobi Gats, a large open air washing area, the hanging gardens, Ferozeshah Mehta, and the monumental Gateway to India Arch at the waterfront. An interesting cultural activity was the Village Fair, which was immediately following the practical task session in the HBCSE building. All the IBO guests were able to watch representative displays of Indian villages and participate in activities from various Indian states. A puppet show, dance from Rajasthan, application of henna on the palms, and making of lacquer bangles were part of this event. Several stalls selling ethnic wares were also put up, so that the participants could choose to buy from a large collection of items. During the week students had a fun time in an amusement Park and the Nehru Science Centre and Planetarium.

The magic experiment

The experiment and the sonnet

During opening ceremony the head of coordinators during his speech showed a magic experiment. While shaking a bottle partly filled with a colourless liquid surprisingly the colour changed to bluepurple, which after a while again turned back to colourless. Once more shaking caused the bluepurple colour again. All students were invited to think about the process in the bottle and to devise an explanation.



One of the students, Thai Le Tran from Germany, who later that week proved to belong to the top-10 gold medal winners took up the challenge in a special way. He wrote the following beautiful sonnet.

Blue Bottle Sonnet

Thai Le Tran, July 17th 2008

*In shabby bottle lies a tale of life concealed
An inert amber liquid seemingly, but to
The mixture's dazzling nature is through force revealed
Some rapid shaking give the brew a blue-ish glow*

*Such splendid power holds the foaming turbulence
The cerulean beauty is yet bound to wane
Inevitable decay marks its transience
The once so pretty fluid has gone plane again*

*The wheel of blue and yellow has infinite turns
But needs the steady stirring to be kept sustained
One has to feed the passion that intensely burns
Or else the smold'ring cinders is all what remained*

*As ev'rything will wither what one fondly grew
It needs one's hard effort to be regained anew*



opening speech



Thai Le Tran



organisers



HBCSE



video task



village fair





Japan, 2009

After a sudden cancellation by the original IBO 2009 host, everybody was happy that Japan volunteered to host the IBO. In fact there was *no money, no time, and no history*. In this way, Japan ensured the continuity of IBO, and acknowledged the development of biology and science education in Japan. The University of Tsukuba was appointed as location, and the Japan Science Foundation (JSF) was the main sponsor.

After having said 'yes' the Japanese with great energy took care for all necessary preparations. That was not easy as several challenges arose during the period before the IBO such as the worldwide financial crisis, and the emergence of the H1N1 epidemic (swine flu). Luckily, the flu situation abated and the organisers managed to mobilise many supporting scientists and institutions and quite spectacularly, His Imperial Highness Prince Akishino accepted the role of honorary president. So the IBO 2009 really became a nationwide event.

The test committee not only included excellent university professors, but also high school teachers

“Japan ensured the continuity of IBO, and acknowledged the development of biology and science education”

experienced in biology education and assessment. That augured well for the quality of the test. Furthermore, a specially constituted Jury subgroup of eight experienced IBO people came some days before the start of the IBO to Japan in order to check the questions beforehand. The recommendations of this expert group proved to be very valuable, especially in terms of clarity of explanations and options.

The IBO became a great success. Despite being the rainy season in Japan, there was no rain during the week. Upon arrival, all participants' health condition and body temperature were checked as measures to combat and contain any outbreak of

H1N1. Each competitor also received a thermometer in order to check daily the possibility of fever.

The opening ceremony was graced by the presence of His Imperial Highness Prince Akishino. He delivered an inspiring speech in which he emphasized the importance of biology, and at the same time the importance of basic research such as taxonomy and morphology. He encouraged the students, stating “I strongly wish you all excellent results in the competition”.

The practical tasks were tough, discriminating and vary varied, which is proven by the following summary.

- Dissection of a caterpillar and identifying internal organ systems and their positions.
- Examining morphology and development of different fruits and seeds.
- Measuring activity of acid phosphatase in using a spectrophotometer.
- Protein determination with help of a dilution series and calibration curve.



- Inheritance of specific features within mutant flies.
- Analysis of extracted protein by gel-electrophoresis.
- Examining cell proliferation using a fission yeast culture and performing measurements with help of a microscope and a cell counter.
- Study on the motile mechanism of unicellular Algae.

A fun practical task for students was learning the skill of Origami, the traditional Japanese art of paper folding, at Origami Night. That was a colourful and hilarious activity. Many students were so fascinated that they just did not want to stop and go on with it after midnight. The produced origami creations indeed were quite good. Tenugui clothes were presented as prizes for the most beautiful ones.

The Jury and students also visited one of Japan's best tourist destinations: the world heritage listed Nikko National Park with Kegon-no-taki Falls, and the famous Nikko Toshogu Shrine. But probably most exciting was Tsukuba Night. It started with a special Japanese meal and after that Japanese drumming and a Yosakoi-Soran dance performance. Everybody was invited to join and

dance together. Students were caught completely in energetic dancing. It became an exciting festival bringing great pleasure to all.

“Following the IBO, the organisers produced a superb report”

During closing ceremony classical Japanese dancing could be enjoyed. IBO president, Dr Poon Kasemsap, presented a humorous and at the same time serious speech in which the organizers and especially their dignitaries Prof. Hideo Mohri and Katsumi Matsuura were complimented. No question was skipped and that was for the first time in 20 years IBO history. On behalf of this 20th IBO celebration also Tomáš Soukup (Head of IBO Coordinating Centre), Pavol Eliáš (one of IBO initiators) and Hans Morélis (Head of coordinators 1992 – 2008) received a plaque for their outstanding commitment to IBO.

Following the IBO, the organisers produced a superb report about the analysis of the test results. Their considerations about reliability and

discriminating value were fine, and brought also to light that the results of the students of one specific country not only were completely outlying but also strikingly similar. The sad conclusion of cheating led to disqualification.

In IBO 1995 the Thai organizers, just before the closing ceremony, held a questionnaire among students, with the aim to inquire their opinion about the IBO. This was repeated in Tsukuba. Some of their remarks are cited below:

- I'm extremely impressed with the quality and set up of apparatus, excellent equipment
- I absolutely love Japan, I especially adore your wonderful politeness and hospitality.
- I like to come back as soon as possible.
- Japanese people are well behaving. I like this way of life
- Nikko was great, I wanted to stay there much longer.
- A special *thank you* to all the team Guides.
- Tsukuba night was very special.
- Japanese food was delicious. I would have preferred more Japanese food.
- My most important price was: *new friends*
- I learned a lot.
- This IBO is an everlasting memory till eternity

The 20th International Biology Olympiad 2009
Tsukuba Night

July 16, 2009

THE 20TH
INTERNATIONAL
BIOLOGY
OLYMPIAD



Korea, 2010



The IBO 2010 report starts with the following beautiful words of Prof. Kil-Jae Lee, chairman of the organizing committee:

The intense summer passed all too soon and finally the end of 2010 has come. The IBO 2010 left me with unforgettable memories. As writing the thanks note, I recalled the past six months. And I find that this summer was one of the happiest moments in my whole life.

59 countries took part in this IBO and the venue was Changwon National University in the south of Korea. The organisation was perfect probably due to the involvement of many volunteers and prominent organisations like the Ministry of Education, the Korean Society of Biology Education and the foundation for the Advancement of Science & Creativity.

During the opening ceremony a spectacular five-drum dance was presented, where dancers played drums slung around them. It was impressive and exciting. Of course there were beautiful speeches stressing the importance of biology, a wonderful arena in which we make new friends easily and about the role of biology in solving problems

related to cope with the needs of the 21st century society.

In Changwon the wording of the tasks was quite good. The Korean Science committee, chaired by our dedicated IBO colleague Sung-Ha Kim, had put much effort in adding for students extra background information in the questions, so the problems to be solved by the students were made clear. That was helpful, but had a disadvantage. The tasks were quite lengthy, more than ever before. The eight person sub-group assisting the organisers in scrutinising the tasks a few days before the start of IBO helped considerably in making improvements. But this could not avoid that translation of the tasks consumed many hours.

“The organisation was perfect probably due to the involvement of many volunteers”

Some countries were involved in the translations until very deep into the night and even into early morning.

The practical tasks covered a broad spectrum of biology. A new and wonderful alternative for experiments, that are not feasible to easily be performed, was the introduction of a computer-based virtual neurobiology lab with data and questions about the response of the rat cerebral cortex to skin stimulation. It was a good application of modern technology. Below some other issues featuring in the practical tasks.

- Reconstructing the phylogenetic tree of six plant and six insect species and the co-evolution between plants and insects.
- Exploration of the spider cephalothorax and abdomen.
- Study of promoter-driven regulation of gene expression using a fluoro-spectrophotometer and DNA electrophoresis.
- Co-relationship analysis between genotype and phenotype and the prediction of gene pool frequencies.



task expert subgroup



Hanbok

opening ceremony



straw workshop

- Characterisation of coastal animal communities and interspecific interaction between predator and prey with the mark and recapture method. This was an elegant task.

The practical tasks were tough with the average score of students only 45%. Solving the problems presented in the tasks required a lot of creative thinking and reasoning and that's exactly what IBO should be all about.

For students a special program for experiencing the Korean culture was prepared: pottery making, twisting straw into a rope, the Tuho game (throwing sticks into a barrel) and a workshop in the martial art of Taekwondo. Having a try in wearing Hanbok, the traditional Korean clothing was also programmed, resulting in many lovely pictures. Due to the windy and rainy weather the excursion to a nature park was cancelled but visiting the Bulguksa temple complex was a pleasant alternative. This site was designated as a UNESCO World Cultural Heritage in 1995 and the beautiful stone relics are famous throughout the world.

Of course, team leaders and students also went for pleasure and took part in Karaoke singing. Playing

“Teams were invited to produce a short video showing in an interesting way the preparation of their team”

drums belongs to the Korean culture and it was inevitable that IBO participants had the opportunity to try this. During the week, students joined a workshop about Samulnuri, the traditional Korean percussion music. At the farewell diner everybody received a small percussion drum, which resulted in a long row of processing students, leaders, organisers, guests and volunteers and meanwhile happily beating the drum. That was great fun.

A new phenomenon in IBO 2010 was the video competition. Teams were invited to produce a short video showing in an interesting way the preparation of their team for the IBO. This video had to be put on Internet (YouTube) before the IBO and during the week, all students could vote which

was the best. During the closing ceremony the winners (Germany) were announced and their entertaining video was shown.

Heartfelt words were spoken at the end by IBO president Dr Poon Kasemsap. He expressed great thanks to the organisers and ended up with: *This Olympiad lasts up only a few days. But all these wonderful memories we shared will certainly be alive in the heart of soul, forever.*

During this IBO, an unhappy incident occurred. From one particular country it turned out that all students came from one and the same school. And even more peculiar was the fact that the results of these students on the multiple-choice questions were by far the best of the whole population of IBO participants. But in all other tests (theoretical and practical), they were far below the average. There was an investigation into this and the country was disqualified. This incident brought to light that a theoretical test consisting of only multiple-choice questions was vulnerable for unfair play. Discussion about how to prevent this became a hot item in following meetings of the IBO Advisory Board.

closing ceremony





IBO 2011

Taiwan, 2011

The National Taiwan Normal University was the host of the 22nd IBO in Taipei, situated on Taiwan, the beautiful island of Formosa. The organisers, with Yung-Ta in a leading role, realised an unforgettable event for 58 participating countries. That also was possible thanks to the commitment of the Ministry of Education and the generous financial support of the National Science Council. Both institutions, of course, were present with their representatives in the opening ceremony and addressed the audience with welcoming speeches. The Taiwan Vice-president Mr Vincent C. Siew graced this solemn and festive meeting and spoke about the notable role of biology in human civilisation:

Thanks to the progress in biology and biotechnology, we are now able to do a very good job of treating many diseases that were once fatal. And now the biggest challenge facing to human race today is how to manage our ecosystem in a sustainable way. Students taking part in this Olympiad are the best of the best. We expect your efforts will bring positive changes to human society.

The entry of the student teams, one after another, is always a beautiful ritual. In Taipei it was more

“The entry of the student teams, one after another, is always a beautiful ritual”

than that as several countries took the opportunity on the stage to impress the audience with surprising acts, which were welcomed with great applause. Everybody enjoyed a foretaste of Taiwanese folkloristic culture through songs, music and typical aboriginal dances.

Standing upon the stage, a photographer took a picture of the complete audience. With so many people quite an experiment and was successful shown in the daily IBO News.

The tests for the students were thoroughly prepared by the Taiwanese scientific committee, but again rather lengthy. So checking the questions by the expert task group and discussing plus translating by Jury was an exhausting job. The result was fine. The practical tasks involved

electrophoreses and using a spectrophotometer. Other tasks included the isolation, identification, purification and determination of protein and studying the association between species in a community. Students furthermore had to devise a phylogenetic tree in examining a set of different and beautiful spiders. But absolutely the most memorable was the task which involved the isolation through dissection and electric stimulation of the sciatic nerve of a bullfrog. The dissection had to be done carefully, but the award was great: the muscle contraction of the lower extremities through electric stimulation of the free dissected sciatic nerve. In the Jury room, many team leaders had raised concerns about the reaction of the students to this task. Maybe students would judge this experiment as creepy. But it was the other way around. Students liked it and were very enthusiastic.

The most difficult task was the one which seemed to be the most simple: examining the structure of plant root, stem, and leaf using self-produced section slides, followed by studying the regulatory mechanism of phosphate homeostasis using

rock-paper-scissors



aboriginal dance



Taipei 101



practical



chopsticking

Arabidopsis root extracts and measuring the absorbance with ELISA reader and comparing this with a plotted standard curve. The average student score on this task only was 32%. That's rather low, but still this task was quite good discriminating among students and that's a goal in a competition.

“Highlights for students were Culture Night and Friendship Night”

After and in between the tasks, everybody had the chance to witness Taiwanese beautiful nature, traditions and culture. A great attraction was visiting the 500 m high Taipei 101 Tower with great views upon the town. Other excursions worth to mention were the trip to Yangmingshan Park, where students could measure the temperature of the fumaroles, the prestigious National Palace Museum, and the wonderful scenic beauty and nature sculptures shaped by water and wind of Yehliu Geopark. Real highlights for students were Culture Night and Friendship Night. During Culture Night every team presented a short performance representing their country and culture. These

included all kinds of music, dance and funny games such the killer game, paper-stone-scissors, and many more. It was great fun. Special awards and prizes were given to:

Liechtenstein	<i>most impressive team</i>
Netherlands	<i>most energetic team</i>
Australia	<i>most friendly team</i>
Sri Lanka	<i>best dressed team</i>
Nigeria	<i>most mysterious team</i>
Germany	<i>best overall</i>

Friendship Night was a mix of feasting upon interesting traditional Taiwanese night market food, rituals like writing Chinese characters, paper cutting and watching the traditional drama madame white snake. It ended up with an exciting disco dance, which of course contributed quite a lot to growth in friendship between all students.

One of the goals of IBO is to promote the exchange of ideas and materials about biology education. For this reason it was requested to bring secondary education biology textbook to Taiwan. A small exhibition was arranged and that proved to be valuable as it is instructive to see how biology is taught in different countries and to share ideas about that.

The closing ceremony of course brought many thank you's for the organisers and much happiness to the students. Winner of the team video competition was Armenia and their video was presented during the farewell dinner and welcomed with applause. Near the end of the farewell dinner a big group of volunteers sung a beautiful song, which sounded beautiful and it was a moving moment, a splendid final piece of the week.

Maybe just one small complaint could be that some students, never experiencing a typhoon or an earthquake, hoped to witness this in Taiwan as this is a hotspot for these phenomena. Bad luck for them, as during the whole Olympiad week weather was wonderful and nature was calm. Of course organisers were very glad with that.

In addition Dr Ching Ji-Wu, Minister of Education stated: “I believe the experiment of competing and interacting with talented young scientist during this IBO will have a major positive influence upon your lives. And by working together, you can make major contributions to solve many global environmental and ecological issues and bring biology in a new era”.



Singapore, 2012

The 59 countries coming to Singapore in July 2012 experienced a wonderful IBO, prepared for them by a small, but skilful team, originating from the National Institute of Education (NIE) at the Nanyang Technological University (NTU), and the Department of Biological Sciences at the National University of Singapore (NUS). These institutions offered residences, dormitories, meeting halls, and laboratories, which all proved to be appropriate, comfortable, and an excellent scientific committee for the tests.

His Excellency, Dr Tony Tan Keng Yam, President of the Republic of Singapore, was present as Guest of Honour during the grand opening ceremony. To mark the auspicious occasion, the President on the stage performed the ceremony of 'dotting the eyes' of two new Chinese dancing lions in order to "bring them to life". Singapore is a melting pot of several ethnic groups and minorities that live peacefully together with considerable cultural diversity. IBO participants witnessed this variety during the opening ceremony. Dance and music was presented by primary school children, who were prize-winners of the annual Singapore Youth Festival.

"Tests were the shortest in 15 years and no question was skipped"

The IBO Jury was pleased with the tests. Not only because of the quality of the questions, but also because of the number of words. Over the years IBO tests have tended to become lengthier, leading to long-lasting and exhausting periods of translation. The Singapore science committee had designed very brief and still well formulated tests and with great success. These tests were the shortest in 15 years and what was also remarkable, no question was skipped. Credit for this last aspect is partly due to the International Task Expert subgroup, which checked the tests beforehand.

The theory tests also were unique as there were no multiple choice questions. Notwithstanding the IBO fair play oath, in some recent IBO had witnessed some rather unfair play. A member of the Jury had provided a copy of the answer key to

the multiple choice questions to his students before the exams. These were unpleasant incidents and of course very undesirable. So the 2011 IBO Advisory Board advocated banning multiple choice questions as much as possible, with success. In Singapore, the questions were only about matching or sequencing aspects, judging statements (true false), or filling out a code or number with no multiple choice at all. This worked out well in terms of reducing the risk of cheating. The results showed that there were no outliers, indicating that cheating was unlikely.

In the plant diversity part of the practical task, students had to answer questions on a durian seedling with which many of them were unfamiliar. Whilst many may have seen a durian fruit, probably none had ever seen a durian seedling. The seedlings used for the practical task had been germinated a few months before the Olympiad.

In the ecology section of the practical task, students had to determine the structure of the simulated benthic communities by counting



dotting the eyes



Bhangra Night



bivalvia dissection



different coloured and sized Mah-Jong chips in different samples. This was an elegant task requiring rank-abundance plots and abundance-biomass comparison (ABC-curves) and stimulating for the students.

In the animal anatomy task students had to compare different molluscs through dissection. Furthermore, an amino acid had to be identified through titration and determining the pI (isoelectric point) and acid dissociation constants. As usual gene-mapping and electrophoresis were also included in the tasks.

Singapore has plenty diversity in terms of language, religion, heritage, and of course, food. Special efforts were made by the organisers to introduce all these aspects of Singapore life into the daily activities. All the meals were carefully chosen to showcase the Singaporean multicultural and varied cuisine. A special Indian flavour was embraced at the Bhangra Night, at which the participants let their hair down, partied the night away, encouraged by the vibrant drums of the Sikhs.

Excursions highlights were to Jurong Bird Park, the resort of Sentosa, and NEWater. Jurong Bird Park is

committed to conservation and exhibiting birds in naturalistic settings. Students first watched a parrot show and then visited birds in their specially created natural habitats, from the grasslands of Africa to the rainforests of South America. Sentosa is an immensely popular island resort off the main island's southern coast. There students visited the famous Underwater World and were treated to a lively pink dolphin and sea lion show.

Singapore is only 710 square kilometres in area and low lying. This means that water supply can be a challenge, but also flooding. In order to secure enough drinking water a special company, NEWater, prepares clean water from waste water. This technical wonder was admired during one of the IBO excursions. Waste water (sewage) is purified using dual-membrane (microfiltration and reverse osmosis) and ultraviolet technologies in addition to conventional water treatment processes. And everybody had the chance to check that the reclaimed water indeed tasted perfectly fine.

In order to avoid flooding of the low lying lands, a special Marina Bay barrage has been built which can be closed in times of awful downpour. At night the barrage also is a favourite location for kite

flying. And so for all participants a kite decoration competition was organised. As the sun set over the Singapore skyline, competitors excitedly assembled on the Marina barrage rooftop to put their aerial creations to the test. Adorned with flashing lights and creative designs, the kites danced and twirled in perfect tandem against the glow of the city backdrop. For many students it was their first experience flying a kite. Meanwhile Jury members were introduced to the steamboat dining culture, a traditional roundtable dining experience to cultivate camaraderie by cooking your own food.

The closing ceremony was a fine mixture of cultural performances, nice speeches and happy students. For the first time not only medals were awarded but also special Certificates of Merit for the 10% of students after the bronze medals. IBO president Dr Poonpipope Kasemsap addressed gracious words to the organisers and a special "thank you" to their chiefs, IBO colleagues Shirley Lim and Lim Tit Meng. The student team from Japan were winners of the video competition with their hilarious entry, dedicated to entertaining and novel uses of Campbell's biology textbook, such as a pillow, weapon, bulletproof vest and much more.



kite preparation and decoration



steambout dining



top gold winner

Switzerland, 2013



Bern, an old city with a beautiful centre and recognised as an UNESCO World Heritage site, was the location for the 24th IBO with 62 participating countries. With having the IBO in Switzerland a dream came true for an enthusiastic organising team almost completely consisting of former IBO participants. Mathias Wenger was the proud chairman of this youngest organizing committee ever, with an average age of 27. During the opening ceremony several Swiss specialties were presented: an alphorn quartet, flag-throwers and yodelling. This meeting also was attended by a dozen Olympiad alumni from the Netherlands, present as supporters for their team and arriving in Bern on bicycle after a week of pedalling more than 700 km.

The young Swiss organisers took the challenge to implement several novelties in the IBO. Most important were:

- Modifying the week's schedule in order to give more time to the Jury to discuss and translate the exam papers;
- Applying a new digitally format for the design of questions which allowed the Jury to easily keep track of changes in text, figures and tables

“All members of the IBO 2013 task committee were former IBO participants”

- and so realising a smoother translation process;
- Use of electronic tablets. No paper was used in the preparation and examination of the theoretical tests at the IBO. All the questions and answers were presented on tablets. In some of the practical tasks, students had to fill out their answers directly in tables on tablets;
- Just one type of questions: multiple true/false (MTF).

The use of tablets was a brilliant idea. It means no paper waste and makes it easier to translate and to mark.

Applying MTF questions was the result of the policy to abstain from multiple choice questions as these questions during several IBOs had proven to be vulnerable for cheating. In IBO 2012, this problem

was solved by using questions based upon matching, true/false, sequencing and fill-out a code answers. After an extensive literature review and talking to local assessment experts, the IBO 2013 scientific committee decided to focus on MTF questions. This facilitated digital testing and as the number of questions increased it also offered the possibility to cover a broader diversity in topics to be tested.

“The use of tablets was a brilliant idea”

Thanks to the chosen digital approach, it was possible to track the progress of students during exams. This offers information about the difficulty of each question, the time spent on each question and whether students revisited the questions. It was interesting that through revisiting in the average students changed to better instead of worse.

All members of the IBO 2013 task committee were former IBO participants. They involved a team of



Dutch supporters by bike



raclette



wood carving



Bundesplatz



crossbow



top gold winner

high school teachers in checking and reviewing all theoretical questions. This aided in adjusting the level of difficulty and to assure many formal requirements. The practical tasks were inspired by research conducted at the University of Bern and the Natural History Museum of Bern. This museum also provided the skulls which had to be measured by students during the practical task about animal anatomy. Working with these real samples was a truly unique opportunity and much appreciated by the students.

Some days before the actual IBO the exams were discussed meticulously in the International Subgroup. This again allowed improving structure, presentation and wording of the exams. A good example was the discussion around the structure of answer tables that led to a clearer and more consistent layout. The same was true for images, several of which could be improved during the subgroup meeting. The outcome of all this was that according to students the exams were difficult, but very interesting.

During excursions all kind of specific Swiss features were visited and presented. It of course included a Berne City Tour. Furthermore a cavern trip to the extensive St. Beatus cave and a mountain trip to

the 1963 m high Niederhorn, with beautiful views and interesting unknown plants and insects. At a cheese diary students learned how to produce Emmentaler cheese, followed by tasting this special cheese. During the Swiss Night in the former Toblerone chocolate factory, a raclette meal (melted cheese with potatoes) meal was ingested followed by workshops about wood carving, producing sounds on alphorns (if you know it, it is easy), chocolate decorating, crossbow shooting and yodelling.

*“Switzerland is responsible
for a real revolution”*

A great idea was the flash mob, organised after the tests. From different direction students in lab coats walked to the City Centre Bundesplatz, where the students advocated the slogan: *Biology around the world*, followed by pleasing fountain play, music and ice-cream.

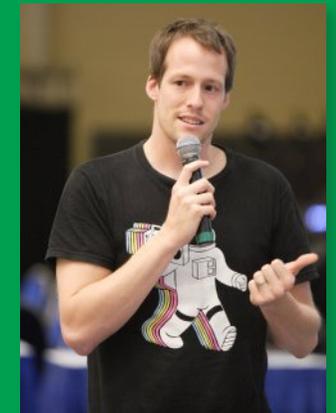
Besides all these positive events one unfortunate incident led to the inevitable disqualification of one of the students through his use of a mobile phone during the competition period, which according to

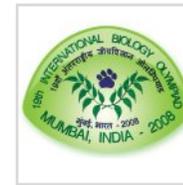
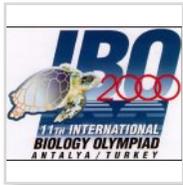
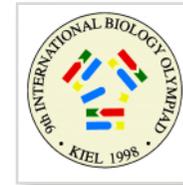
the IBO rules is strictly forbidden.

Many Jury members attended a special for them organised educational session about biology awareness and education in their countries. Several presentations were given with focus upon comparing teaching methods and curricula. What can be done by each country to improve the state of biology education worldwide? This educational session proved to be popular, useful and stimulating.

During the closing ceremony the young Swiss organisers received many compliments for their excellent work and improvements of IBO. Tomáš Soukup quoted: *Switzerland is responsible for a real revolution*. The IBO president Poonpipope Kasemsap stressed the importance of new friendships and connections with other biologists. As well as delivering a memorable IBO and medals for the team, the successful Swiss team, together with the student from Liechtenstein were voted to be the winner of the video competition.

IBO 2013 was an intensive and great experience.





Backgrounds on IBO

In the first ten years of IBO the number of participating countries increased very rapidly. That was very satisfying for those who began this venture, but the success also caused some uneasiness for host countries. Every year the expectations about the number of people to come were too low and led to the host country having to meet higher costs for accommodation, and the necessity for providing appropriate facilities for the practical tasks. Due to this, there were proposals to reduce the number of students from 4 to 3 per country, but luckily each time organizers were able to cope with the circumstances. One of the solutions was to organize the practical tasks in 'shifts'. Nowadays the increase in participating countries is slower and there is some stabilization. See the diagram below.

Preparing challenging IBO tests may seem straightforward, but it proved to be considerably challenging. Many team leaders are keen for their students to win medals, so they look very critically at the test questions. A greater number of participating countries meant more discussants so over time the Jury meetings have tended to last longer and longer and often questions were

skipped as no resolution was found. In order to help host countries it was settled that several months before the actual IBO every country had the duty to send good quality questions to the host country. Unfortunately this often did not work, as the supplied questions had not been checked by assessment experts. Poor quality questions are omitted or 'skipped' from the final theory papers. Figure 2 shows that skipping questions for many years was a real problem.

As we can see especially 1996, 2000 and 2007 were problematic. The quality of the tests became an item during meetings of the IBO Advisory Board and many recommendations for improvement were produced. After 2007 it was clear something had to change. A small special subgroup of International experts in the subject, assessment and test design was recruited among IBO Jury members. This group arrived earlier at the IBO site, checked and discussed the tasks and supported the IBO host with suggestions for improvement. As we can see in the diagram this worked out well, with improvements in the quality of the papers.

Another advantage was that at the same time

another problem was solved: the discontent about too much knowledge questions in the tasks. According to the IBO regulations test questions should focus on reasoning, problem solving and understanding. The guide states that questions dealing with just knowledge should be expelled. However, in Figure 3 we can observe that during many years in the average one quarter of IBO theory questions tested only knowledge, rather than understanding, problem-solving and reasoning. After the establishment of the

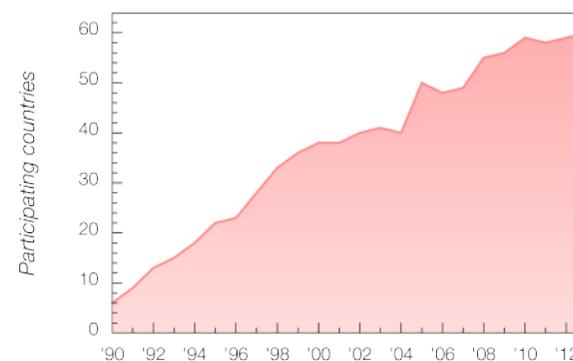


Figure 1. Number of countries participating in the IBO over the years.

International expert subgroup this proportion dropped considerably.

During the IBO opening ceremony every participant, both students and leaders, take an oath to promise solemnly to take part according to the rules of fair play. Unfortunately it has been proven that, notwithstanding this oath, some individuals do not behave in line with the fair play principle.

In 2010, three students of one country had unusual scores on the two theoretical parts, with extremely high scores on the multiple choice set of questions (part A) and rather low scores on the other set (part B) of questions. This is shown easily in the scatter diagrams in Figure 4, where every dot represents the score on part A and part B of a student. In applying scatter diagrams for other earlier IBOs it came to light that in 2006 also an

irregularity had occurred.

Scatter diagrams also clearly show the distribution of scores and in this way offer information about the discriminating power of a test and correlation between test parts. This is well illustrated in comparing scatter diagrams of students' practical and theoretical scores in IBO 1994 and IBO 1995 (Figure 5). In 1994 all students had very high scores,

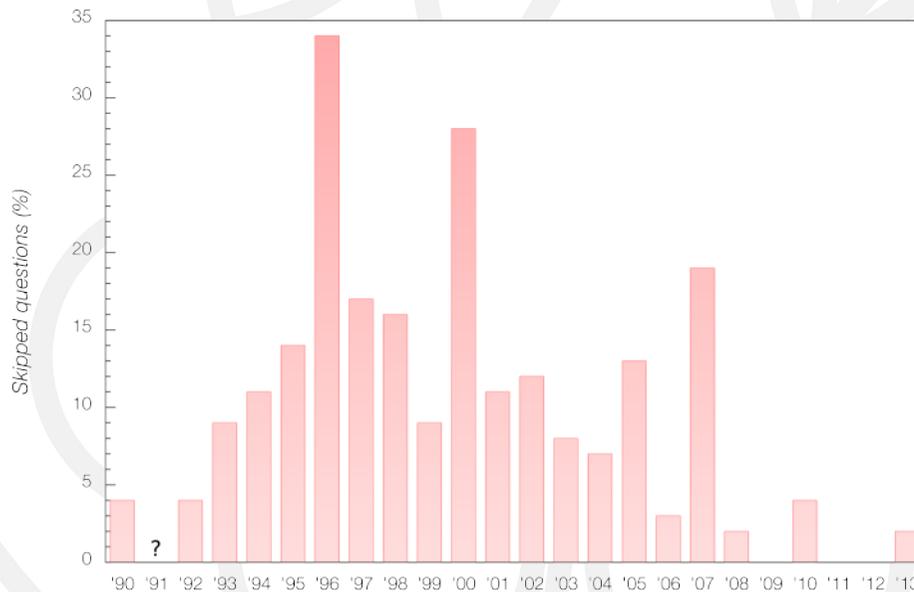


Figure 2. Percentage of skipped theory questions over the years.

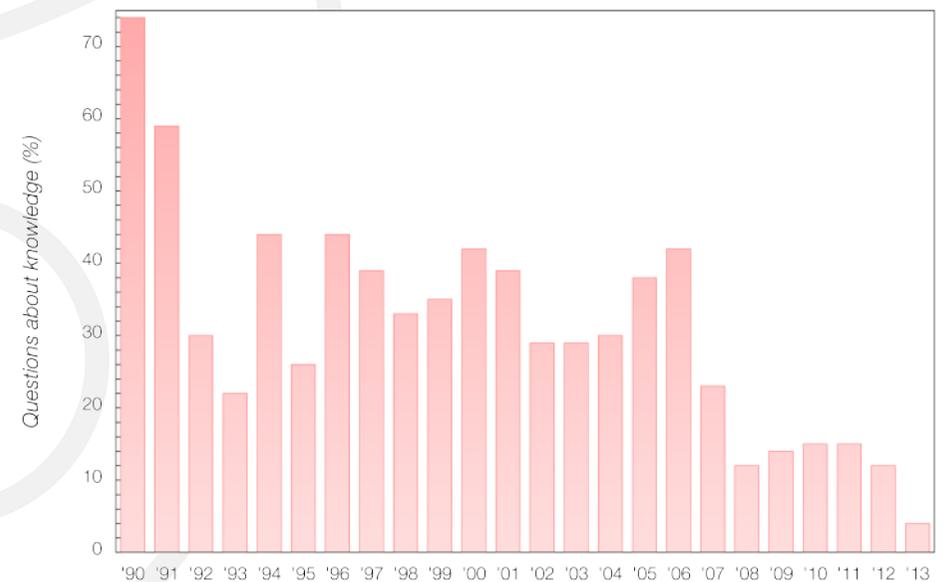


Figure 3. Percentage of theory questions about knowledge over the years.

in the average 79% for the practical task and 73% for the theoretical test. This still is a record in IBO history. Of course, in that year the discriminating power of the tests was limited and also correlation between theory and practical results was low. Examining the score pattern in 1995 it is apparent that the 1995 IBO was a much better quality.

Since the start of the IBO in 1990, data about the IBO has been gathered from coordinators and students through questionnaires in order to learn from each other. Some interesting results are given next.

Aspects concerning (biology) education

The IBO countries were asked what proportion of the timetable in the final class of secondary education was allocated to biology lessons. Figure 6 shows how often a percentage range was mentioned. It will not surprise that differences are quite big.

One of the questions asked how often students perform experiments in biology lessons. Figure 7 shows this as a percentage of the biology lessons. Again this varied considerably.

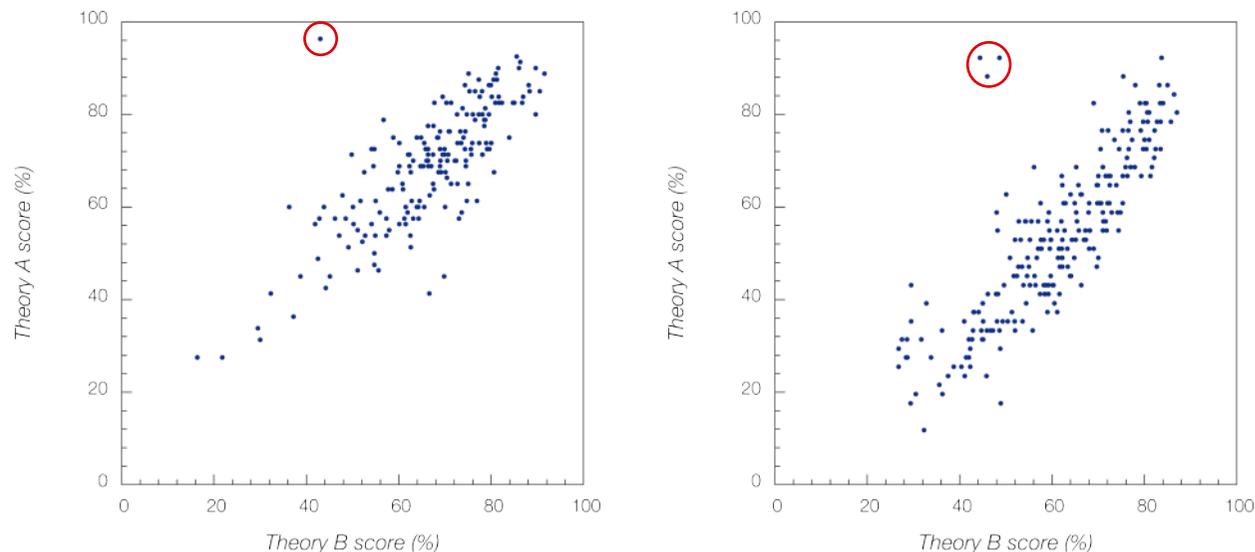


Figure 4. Scores of theory part A versus part B for IBO 2006 (left) and IBO 2010 (right).

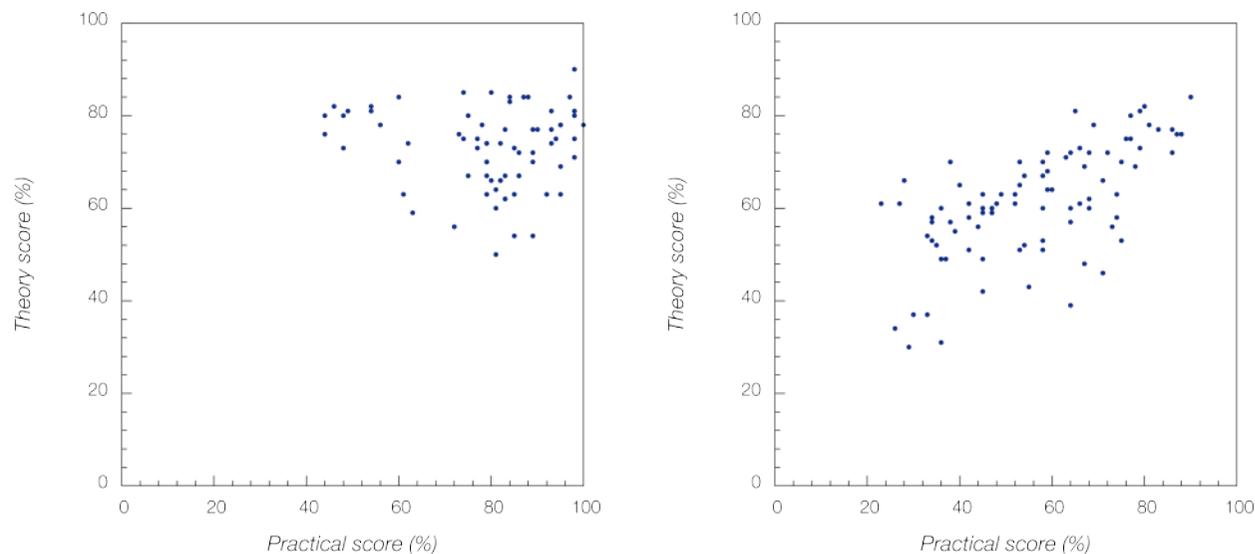


Figure 5. Practical scores versus theory scores for IBO 1994 (left) and IBO 1995 (right).

Other questions asked about the curriculum coverage of participating countries and compared the school with the IBO curriculum. Specifically, what was important in the different biological fields and how much time is dedicated to topics in the curricula of IBO member countries? This is indicated in the next diagram as a percentage of the total available time for biology. Figure 8 shows the averages for all IBO countries.

Another point of comparison is the age at which students enter tertiary education, such as university. The question asked what is the age of students when they leave school and enter

university? Figure 9 shows that in almost half of all IBO countries this is 18 years. Some students enter university when they are younger, such as 16 or 17 or older 19 or 20, but these are less common.

Aspects concerning the organization of the National Biology Olympiad

Which institutions are the main sponsor of the NBO competition? Figure 10 shows how often an institution is mentioned (expressed in percentages). For most countries the Ministry of Education is the main sponsor.

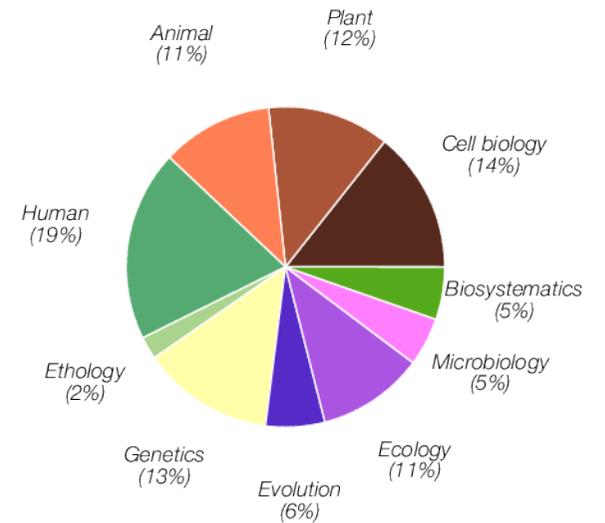


Figure 8. Impact of topics in biology curricula worldwide.

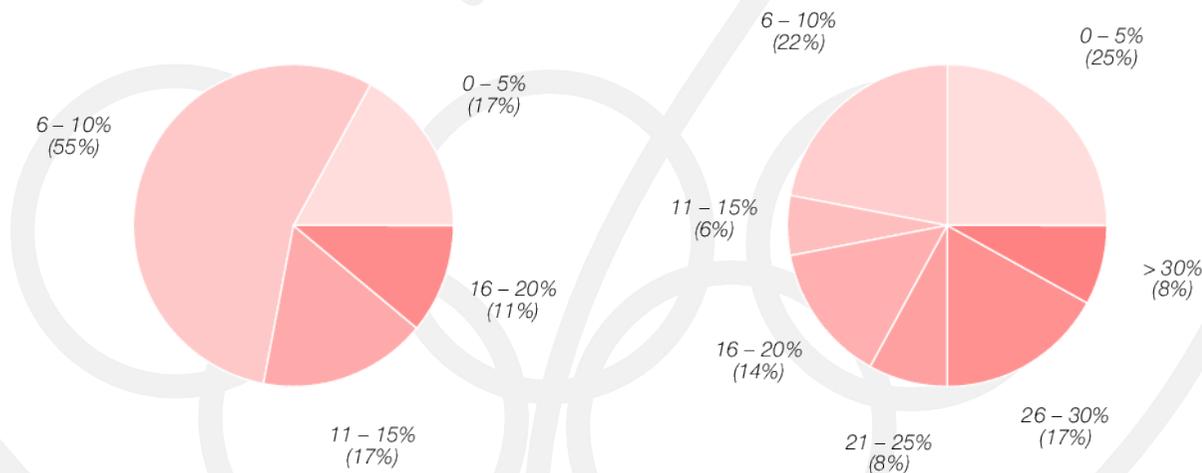


Figure 6. Percentage of education time dedicated to biology in IBO countries.

Figure 7. Percentage of biology lessons in which students perform experiments.

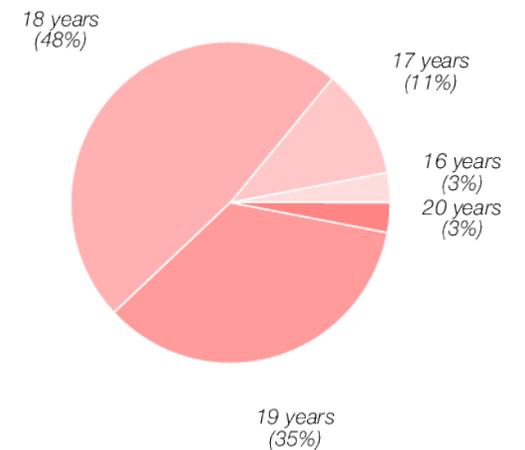


Figure 9. Age of students when entering university.

Which institutions are the main organizers (in percentages) of the 1st round and final round of the National Olympiad? Figure 11 gives an overview of these organizers.

What are the main expenses for the National Olympiad? Responses from all countries show great variation. Some countries expend almost all their money (up to 80% of the budget) on the organization of pre-rounds. For others the final round is the biggest cost (up to 90%). Some countries have no any extra training for students, while others expend more than 40% of their budget on that. In Figure 12 we show the average costs per item (as a percentage of the budget) for all countries (IBO travel expenses excluded).

What kind of prizes are awarded to winners of the National Olympiad? Some countries offer valuable prizes like big money and scholarships. Others just give a simple certificate. Figure 13 shows what kind of prizes are awarded to students.

Aspects concerning the IBO

We were interested in the kind of study will students start at university after the IBO. Figure 14 shows in percentages the choice of the students participating in IBO.

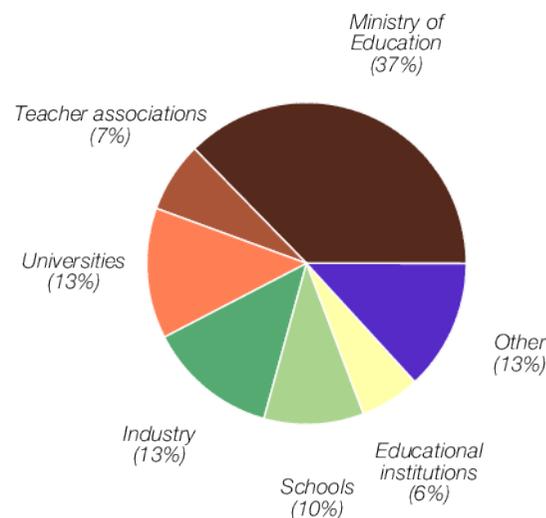


Figure 10. Main sponsors of the national competition.

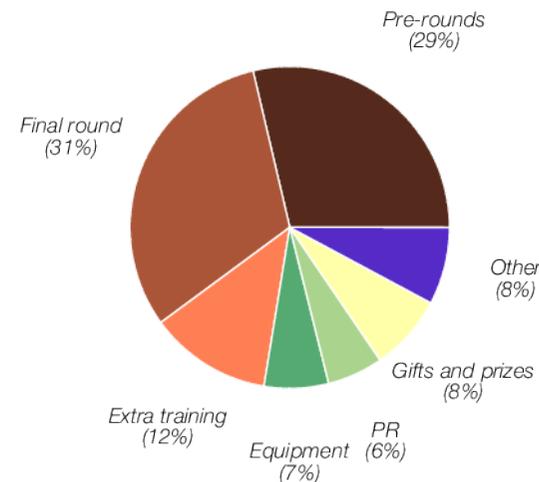


Figure 12. Expenses for the National Olympiad as percentage of the budget.

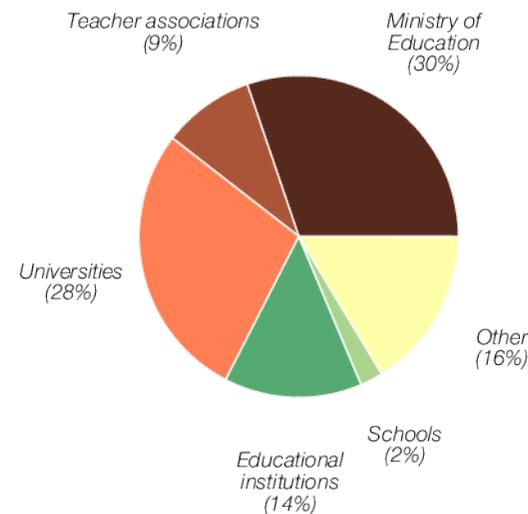
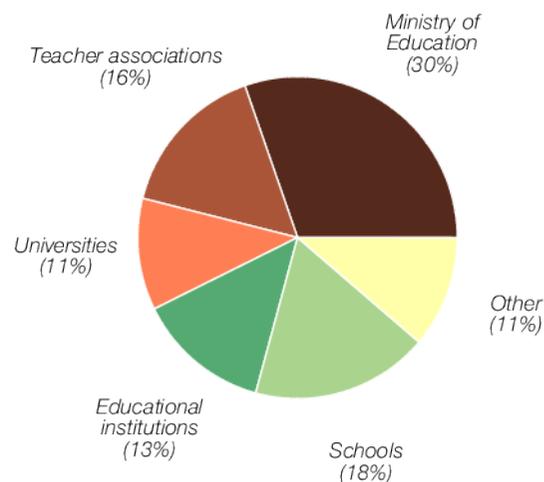


Figure 11. Main organizers of the NBO competition, first round (left) and final round (right).

During the 1995 IBO students were asked how they experienced their participation in the IBO and their answers were very positive. In 2009 the questionnaire was repeated and again students were really very positive. See Figure 15 for the results on the following questions:

- How much did this IBO contribute to stimulating your interest and enthusiasm to study biology in your country?
- How much did this IBO encourage you to demonstrate your knowledge and talents in biology and science?

- How much did this IBO promote and stimulate the exchange of knowledge and experiences with students of other countries?

Competitors' attitude

Mary Oliver, team leader of Australia, together with Grady Venville fulfilled an exploratory case study on the attitude towards and passion for Science of Olympiad students. The results were not surprising: these students are positive about Science. But really interesting was the fact that their passion for science grew tremendously

through attending the Australian Science Summer Camp and participation in the IBO. This shows clearly the impact of these events on students commitment and attitude. An article about the case study was published in the international Journal of science Education. *

Preparing for IBO

The Battle of the Brains, now downloadable from the IBO website is a beautiful documentary showing the story of the Australia National Olympiad in 2005 The focus completely is upon the

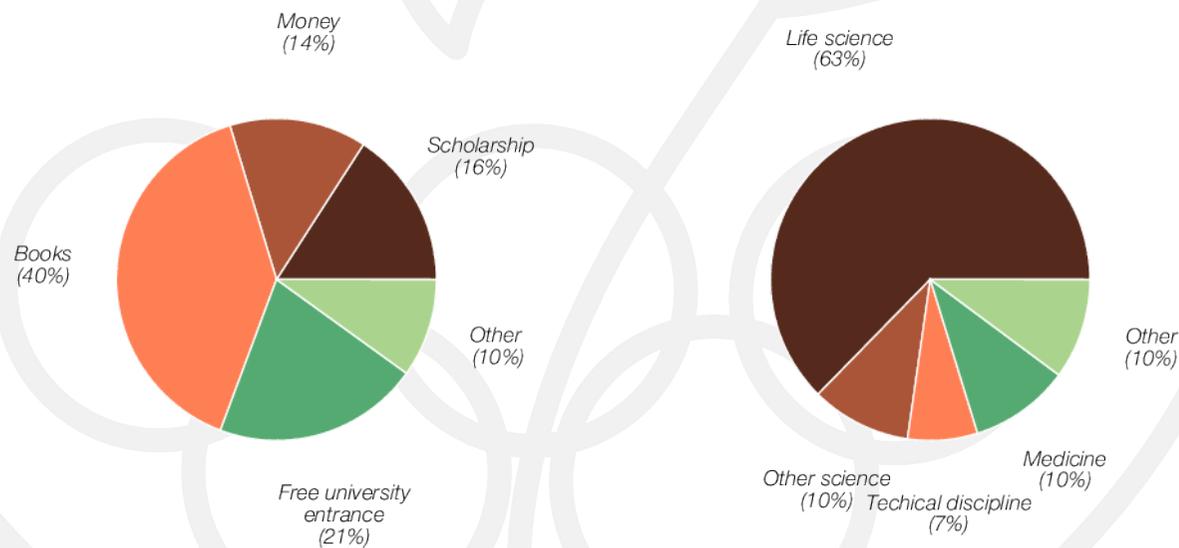


Figure 13. Prizes awarded to winners of the National Olympiad.

Figure 14. Choice of study for students participating in the IBO.

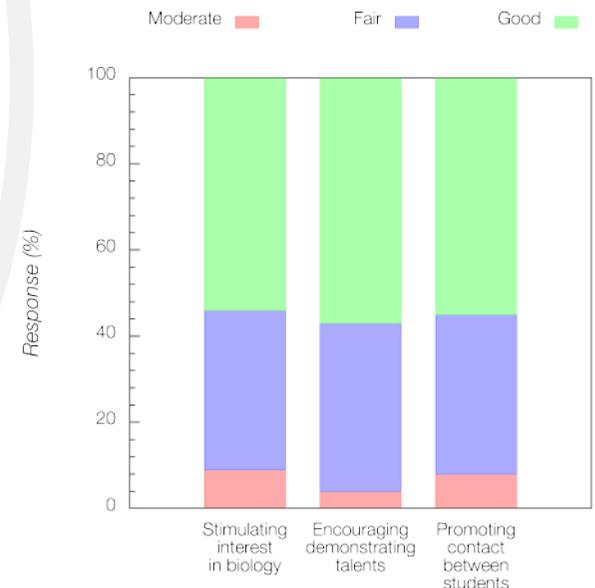


Figure 15. Some results of the questionnaire on the experiences of the 2009 contestants.

journey students make from the very beginning to the final glorious moments of belonging to the winners.

Notwithstanding the documentary is from some years ago, it still is great to see the process the students are involved. Their dreams, struggles, emotions, commitment and growing friendships are absolutely nice to watch. The movie also is an excellent tool for promoting the impact of the Biology Olympiad.

Skills survey

In 2013 more than forty member countries responded to a survey of the teaching and assessment of practical skills designed by Dr Andrew Treharne, the UK NBO Coordinator. The purpose of the survey was to help inform development of the IBO syllabus and further the aims of the IBO, specifically “the opportunity to compare the syllabuses and educational trends in biology in different countries”. Countries were asked to provide information relevant to students studying biology at level 3 as defined by UNESCO.

It revealed that practical skills are taught to only a minority of such students in 35% of countries, to most students in 25% and all students in 40%.

Practical skills are not assessed in 17.5% of countries, they are assessed directly (by practical examination) in only 20%, indirectly (by written examination) in 37.5% and by a mixture of direct and indirect assessment in the remaining 25%.

The skills listed in the IBO syllabus were used to investigate the teaching of specific biology disciplines. Collating these responses for each discipline reveals that only basic laboratory skills are compulsory or taught to a majority of students. Coverage of skills which are specific to

microbiology, animal anatomy & physiology and ethology is particularly low. The majority of countries insist that students are taught at least one microbiology skill but less than one quarter include at least one compulsory ecology skill.

Figure 16 shows some of the results. More results can be found on the IBO website.

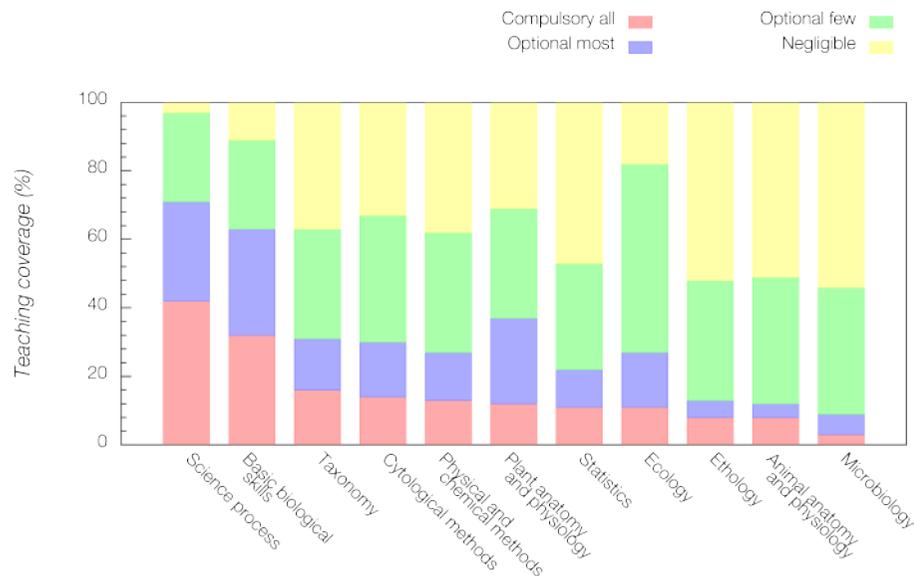


Figure 16. Compulsory teaching of practical skills. Coverage of each skill area over 40 countries.

* See <http://dx.doi.org/10.1080/09500693.2010.550654>



Additional resources

The following documents are available from the IBO website, <http://www.ibo-info.org>

- A Guide to the International Biology Olympiad, including the IBO Organization Rules
- Practical and theoretical IBO tasks (exam papers) 1990 – 2012
- Archive of photo and video IBO impressions in picture and movie from past Olympiads
- Names, results and medals of IBO participants 1990 – 2013
- Articles
- NBO descriptions



25 years of

International Biology Olympiad

