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Report on the MiSAC Annual Competition 2022

Microbes Made My Lunch

Sponsored by MiSAC

The aim of the 34rd MiSAC Annual Competition was to increase an understanding among teenagers of how the activity of microbes is involved in the production of many foods and drinks. The requirements maintained the well-established approach of basing the competition on a topic that is associated with school curricula but with specifications that require students to explore material beyond the curriculum. It was evident that many students had enjoyed researching the topic and demonstrated their enthusiasm in producing an illustrative poster in a whole host of bold and imaginative ways.

We welcomed back entries from regular school participants and were pleased to find the number of newcomers to the competition continued to increase. As usual, there were two entry groups, KS3 and KS4 (S1/2 and S3/4 in Scotland). Eighty four group entries were received from **72** establishments in England, Northern Ireland & Scotland and one from overseas, ie, 10 schools submitted entries to both entry groups. In total, there were 378 separate entries consisting of 249 in the KS3 (S1/2) group and 129 at KS4 (S3/4). Many participants took the opportunity to work together in groups of up to 4, making a total of **583** students having had the opportunity of entering the competition. MiSAC would like to thank teachers for providing information on the entry form about how they heard of the competition; it is useful to us in that it helps us target efficient publicity of the competition for the next year. Judging, which took place at the University of Reading, was again hosted by the NCBE, one of MiSAC's sponsors. The judging panel consisted of Emeritus Professor Anthony Whalley, Liverpool John Moores University, and Dr Fiona Lane, Head of the NCBE, together with officers of MiSAC.

The basic requirement was to produce information for a poster for teenage students on a catering or food microbiology course at a local college to show how microbes help to produce **three** types of food and **one** drink. Examples of relevant foods were provided for guidance but choice was not limited to these. The judges expected to find that the lunch menu might consist of bread, cheese and yoghurt with accompanying quantities of coffee, soft drinks or beer. However, students were frequently much more adventurous in filling their lunch boxes. There were olives, pickled vegetables, sauerkraut & kimchi; salami and mouthfuls made from *Quorn* mycoprotein; miso soups, tempeh (fermented soybeans) flavoured with soy sauce, idli and dosa (fermented lentils & rice) with natto (soybeans) and desserts of jalebi and nata de coco. Some quaffed champagne with their lunch; others enjoyed a glass of ginger beer, kefir, kombucha or pu-reh tea, tepache (fermented pineapple), kvass (fermented cereal grain) or buttermilk. There was even a Ukranian tribute poster, decorated in the now-familiar blue and yellow colours, featuring borscht, varenyky, syrnyky and washed down with a shot of horilka!

Just providing a cornucopia of microbe-assisted delicacies was not, however, sufficient. Students had to provide outlines of the production processes and explain how the metabolism of the bacteria, moulds and yeasts were responsible for producing the characteristic flavours, textures and nature of the foods and drink. This was a more-demanding requirement that some students found difficult. Entrants were reminded that the judges would be looking for the scientific merit of an entry. This was where students could impress by correctly naming the microbes involved. It became evident that teachers *still need to emphasise how microorganisms are to be correctly named when typed or hand written*. Judges commented on how many examples they had encountered of "a bacteria", "the fungus are" or even "the bacteriums". Many students are becoming more precise in correctly writing genus and species names, such as ***L**actococcus **l**actis*, using an italic font and the appropriate initial letters of each word - but this skill is not always applied correctly. Some students used an italic font to type all microbe names and then underlined these names as well, which is only required if the words are hand written.

The format of the competition entry had to be printed on one **A3 sheet** (or two A4 pages attached side-by-side), *using only one side of the paper* and could be prepared either by computer or by hand. The judges were disturbed to find rather too many entries that did not obey these requirements. Some entries were on a single A4 sheet which cannot provide enough space for the detail needed to make an effective poster. This year, a substantial number of students wrote material on the ***reverse*** of their posters. It seems obvious to the judges that such information will never be read by someone studying a poster displayed on a notice board. The material on the reverse was usually a list of sources used in the student's researches - an admirable feature which all students should consider including - but ***not*** positioned where it cannot be seen!

Some students were perhaps frustrated by the limited space that an A3 sheet offered for their concept of a poster and created opportunities to expand the available surface area. They glued on pockets into which further sheets of paper were inserted, giving additional information. Alternatively, they created a series of flaps which the reader had to lift, or folded long strips of paper into a compact concertina stack which could then be pulled out to reveal the details of a microbial process. All very ingenious, but they are definitely **not** features of a good poster which the judges would recommend.

The creation of a well-designed, eye-catching, illustrated poster is not an easy task. The 2022 cohort of prize winners, and those students who gained a commendation for their entries, are to be congratulated for the high standards they achieved. There were also many exceptional entries that just failed to gain sufficient credit for an award. The biggest challenge is deciding on just the right amount of textual information to include about the chosen foods and drink, whilst allowing sufficient space for attractive illustrations to produce a poster which has an immediate and visual impact. In their online searches, many students found a great deal of useful and interesting information. Some felt compelled to communicate everything they had learned. Inevitably, this resulted in the use of a smaller font to fit in all the information and the reduction of Illustrations, in size and number. Their posters often looked cramped and were visually unimpressive. Students should be restrained in their choice of colours for their entries; multiple-background shades and too many different coloured fonts for the overlaid text make the information extremely difficult to read and result in a not very effective poster.

The judges were impressed by the imagination, creativity and sense of humour of the students as they set about producing their posters. Many showed remarkable technical skills in using their computer to design their entries. The student commended for technological initiative included images of QR codes in her poster alongside information about bread, kimchi, yoghurt and wine which actually worked with a smartphone to connect to URLs giving further information about these foods and drink. Those who chose to work by hand could also achieve great results, worthy of an award. On one poster, the student appeared to have used paint for the illustrations!

We should like to thank teachers for responding to the request to record full identification details on the back of each entry which eases the administration of several hundred entries, many involving more than one student. Only one aspect sometimes causes problems: our ability to decipher teachers' hand writing of *their e-mail addresses* and in the *spelling of their students' names*. The latter is particularly important in the production of students' certificates of entry, by which we acknowledge their contribution to this competition. We would also like to thank teachers for their support of the competition this year, despite the continuing disruption to life and education caused by COVID-19. A total of £1335.00 was awarded to prize winners and their establishments, and several entries were awarded a commendation for the design of their posters. Winning and commended entries are displayed on the MiSAC web site www.misac.org.uk, which includes a list of the prize-winning students and their schools. MiSAC thanks the students for making the competition a success and their teachers for their support. We look forward to entries for the next MiSAC competition in 2023.