



Attention: Head of Biology

AIM OF THE COMPETITION

“To develop an appreciation of the value of the microscope for studying the living microbial world.”

Cartoons and descriptions of microbes are widely used for drawing attention to a variety of products, services and causes. They range in time and style from Hilaire Belloc's poem *The Microbe* written in 1901 to present-day TV advertisements, e.g. for a toilet cleaner. Although these 'microbes' may have some basis in reality, it is only through the correct use of the microscope and careful observation that their true features are seen and the diversity of form and function in the microbial world fully appreciated.

“**THE MICROBE** is so very small
You cannot make him out at all,
But many sanguine people hope
To see him through a microscope.
His jointed tongue that lies beneath
A hundred curious rows of teeth;
His seven tufted tails with lots
Of lovely pink and purple spots,
On each of which a pattern stands,
Composed of forty separate bands;
His eyebrows of a tender green;
All these have never yet been seen –
But Scientists, who ought to know,
Assure us that they must be so...”
Hilaire Belloc *The Microbe* (1901)

What do
microbes
really
look like?

Closing
date:
2 March
2015



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Microscopical Club



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OBJECT OF THE COMPETITION

Produce a poster that uses **your own experience** to instruct and encourage your classmates in using

the microscope correctly in order (a) to find out what microbes really look like and (b) to record their observations. The poster must be submitted on one side only of one A3 sheet (or two A4 sheets attached side-by-side) as hard copy and may be prepared by either hand or computer. The poster must give some details of the microscope you have used including the magnifying power of the eye piece and objective lenses, the total magnifying power they produce, a description of the samples used, and the type of preparation(s) you have made

for examination under the microscope. Give your classmates the benefit of your experience in getting the best out of your microscope; this could be by making a list of not more than five 'top tips' or by giving hints about difficulties you encountered and how you overcame them.

Illustrations must be included, either drawn by hand or photographs you have taken with approximate sizes of the illustrated microbes. Name the group to which each illustrated microbe belongs, i.e. protozoa, fungi, algae, cyanobacteria (a.k.a. 'blue-green algae') or bacteria. Use the singular form where appropriate, e.g. 'a protozoan'. Observations might also extend to following successions of populations over several weeks, noting the distribution of microbes in your preparation(s), making inferences about their sources of food and energy, and estimating numbers.

SOURCES OF LIVING MICROBES

There are several readily-available natural sources in which a wide range of living microbes can be easily seen with a light microscope and low-power magnification, i.e. a total magnification of x40 and above. The following are suggestions. A hay infusion (www.misac.org.uk/PDFs/MiSAC_helps.pdf) is an ideal source, particularly for following successions of populations over several weeks or even a few months. Old, very cloudy flower vase water, preferably without the sachet of additive, is also a useful source. Pond water is unlikely to be rewarding unless microscope slides or cover slips are left immersed long enough for biofilms to form on their surfaces. Alternatively, ready-made mixtures of protists are available, e.g. the dried preparation PK6 Sleeping protozoa from Sciento (www.sciento.co.uk).



FURTHER INFORMATION

Guidance on preparation of materials for examination, microscopy and recording your observations is available at www.misac.org.uk/competition.html.

WHAT MAKES A GOOD POSTER?

Posters rely on an immediate visual impact which is achieved by eye-catching design, simple layout, strong images and a small amount of text made up of short, clear sentences of words that your classmates can understand. Use font sizes that can be read at a distance of 2-3 metres. Don't use lots of different colours.

PRIZES

School: 1st £250 2nd £125 3rd £70
Student: 1st £100 2nd £50 3rd £25
A certificate will be awarded to each student submitting an entry of scientific merit. Each school will also receive some microbiological teaching materials. The

results will be published on www.misac.org.uk where previous winning entries can be viewed.

RULES

1. Judging will be based on two entry groups: KS3 (S1/2) and KS4 (S3/4).
2. Each entry must be submitted on paper, on one A3 sheet (or two A4 sheets attached side-by-side) using one side of the paper only, and may be produced either by hand or by computer.
3. Entries may be created by individuals or by groups of no more than 4 students.
4. A maximum of 10 entries per school in each entry group is permitted.
5. Account will be taken of originality, presentation and effectiveness in communicating with the intended audience.
6. Only entries that conform to the competition rules and show scientific merit will be considered; note the

requirements and the suggestions provided.

7. Evidence of plagiarism, such as downloading text, diagrams and photographs directly from web sites without modification and interpretation, will result in disqualification. (Recommend only reputable sites for research; see www.open.ac.uk/webguide for tips.)
8. Each entry must be clearly labelled on the back with the name and address of the school, the teacher's name, the full name of each contributing student and the entry group, i.e. Key Stage 3 or S1/2 and Key Stage 4 or S3/4.
9. Entries cannot be returned and may be used for promotional purposes by MiSAC and the competition sponsor.
10. Closing date for entries: 2 March 2015.

Sponsored by the Quekett Microscopical Club



Entry form*

Name and address of school:

Name of teacher:

.....

Tel no:

.....

Email:

.....

KS3, S1/2 entry group

KS4, S3/4 entry group

Name(s) of pupil(s)

Name(s) of pupil(s)

1

1

2

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** Personal data for use only in connection with the MiSAC Annual Competition*

How did you learn of the competition? Please tick MiSAC web site Mailing: personal/to school ASE Conference Other

Don't forget to keep a copy of the rules and entry form! Address for entries: **MiSAC Competition, c/o NCBE, University of Reading, 2 Earley Gate, Whiteknights Road, Reading RG6 6AU**