

Attention: Head of Biology **2017 Competition** for KS3 and KS4 (S1/2 and S3/4 in Scotland)

# The Antibiotic Crisis

## AIM OF THE COMPETITION

“To develop an understanding of ‘antibiotic resistance’ and its consequences.”

The rise in numbers of bacteria that are resistant to antibiotics and the lack of new antibiotics in the pipeline are among the biggest challenges facing the world today. We can no longer be sure that infectious diseases which have been readily cured in the past will continue to be treated successfully. Another consequence is the increased risk of catching untreatable infections during surgery in human and veterinary practice. However, bacterial resistance to antibiotics cannot be eradicated and without urgent action more deaths will occur. The UK government is well aware of the situation and has taken a leading role in responding to this urgent problem.

## 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](http://www.misac.org.uk) where previous winning entries can be viewed.

## OBJECT OF THE COMPETITION

Your task is to produce information for a section of a new science web site for teenagers to promote a better understanding of the nature and consequences of the ever growing occurrence of antibiotic resistance among bacteria.

Here are some aspects you might consider:

- Common misunderstandings about ‘antibiotic resistance’.
- Patient pressure on doctors and vets to prescribe antibiotics.
- Completing the full course of antibiotic treatment.
- Thorough hand washing.
- Advice available from pharmacies.
- Preventing cross-contamination in hospitals.
- Misuse and overuse of antibiotics in rearing farm animals.
- Ease of obtaining antibiotics in some countries.
- Need for new antibiotics and novel strategies for treatment, prevention and diagnosis.

## FORMAT OF ENTRIES

Your entry must be submitted as hard copy on one side only of one A3 sheet (or two A4 sheets attached side-by-side) and may be produced by hand or computer. Group entries from no more than 4 students are permitted. See overleaf for some useful web sites and a full set of rules.

**On the first half of the sheet** summarise what you see as the main issues behind the increase in the resistance of bacteria to antibiotics and suggest possible ways of solving the problems. The aspects already listed are provided as guidance but you might think of others.

**On the other half of the sheet** describe the science behind some of the issues you explored on the first half of the sheet. For example:

- ways in which various types of antibiotics work;
- mechanisms of resistance to antibiotics;
- transfer of resistance from bacterium to bacterium and spread of resistant bacteria through communities of people, livestock or pets.



Closing date:  
27 March  
2017



## BREAKING NEWS

### Last resort antibiotic fails

Patient has urinary infection by *E. coli* strain resistant to colistin

### New superbug forces ward closure

Outbreak of MRSA triggers closure of surgical ward for deep clean

### Quarter of shop-bought chicken has superbug

Antibiotic-resistant *E. coli* in 22 of 92 samples from major supermarkets

Name one disease and the bacterium (genus and species) which causes it; note that the genus begins with an uppercase letter and the species with a lowercase letter, e.g. *Staphylococcus aureus*.

Part of the judging will be on scientific content so aim to enhance the content with photographs, drawings, statistics or other data such as sources of further information. However, as well as providing an entry that is scientifically factual and informative remember that it also has to be sufficiently lively and well-designed to appeal to a teenage readership.

Plagiarism will be penalised, so use your own words. Use only reputable web sites for your research because online information has not necessarily been checked for accuracy.





## 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](http://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 the competition sponsor.

10. Closing date for entries:  
**27 March 2017.**

### USEFUL WEB SITES

**Government five-year antimicrobial resistance strategy 2013-2018:** <http://bit.ly/1hyOKjl>

**Wellcome press release – antibiotic resistance poorly communicated and misunderstood by public:** <http://bit.ly/2h3um1N>

**Fact file: Antibiotic resistance – a challenge for the 21st century:** <http://bit.ly/2gMubfn>

**Antibiotics vs bacteria. MiSAC matters 1:** <http://bit.ly/2ifr8wy>

Sponsored by



## 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 .....

2 .....

3 .....

3 .....

4 .....

4 .....

5 .....

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10 .....

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

**How did you learn of the competition? Please tick**  MiSAC web site  Post  Email  
 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**