

## Drug development

### Aims

You will be learning to communicate information about scientific investigations.

### Overview

Communication is a vital skill in science. Scientists must be able to communicate their work to a variety of different audiences in a variety of different ways:

- Write-ups of their research in scientific journals for other scientists to read
- Articles or blog posts about their work for other scientists and the public
- Talks to engage the general public
- Applications for funding from awarding bodies

It is important that they use a range of techniques to communicate scientific information and that it is appropriate to the task and the audience. They may use different formats and style in their communication along with suitable images, diagrams, and charts.

### Task

MRSA is type of drug-resistant bacteria that infects people. New antibiotics to treat it need to be found.

Three scientists were asked to carry out tests on the effectiveness of four potential new antibiotics on the growth of MRSA. They each used a different method.

Your task is to use the results from each scientist to decide which antibiotic shows the most promise as a new drug to treat MRSA in people and should be tested further. You should:

- comment on how suitable each method is
- describe what the results from each scientist show (a conclusion)
- make a decision about which antibiotic should be tested further and explain why you think this.

Scientist 1 – Carried out experiments on mice. They infected 50 mice with MRSA. They then split them up into groups of 10. Each group was given a different treatment.

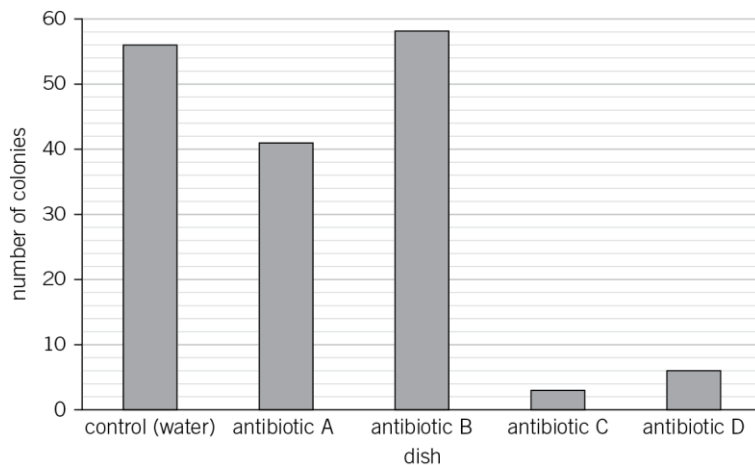
### Results

	Number of surviving mice in each group							
Time in hours	12	24	36	48	60	72	84	96
control (healthy mice)	10	10	10	10	10	10	10	10
control (Infected mice given no antibiotic)	10	9	9	8	5	3	2	1
antibiotic A	10	10	10	7	7	5	5	4
antibiotic B	10	10	9	7	5	3	1	0

antibiotic C	10	10	10	10	10	7	7	7
antibiotic D	10	10	9	9	9	9	9	9

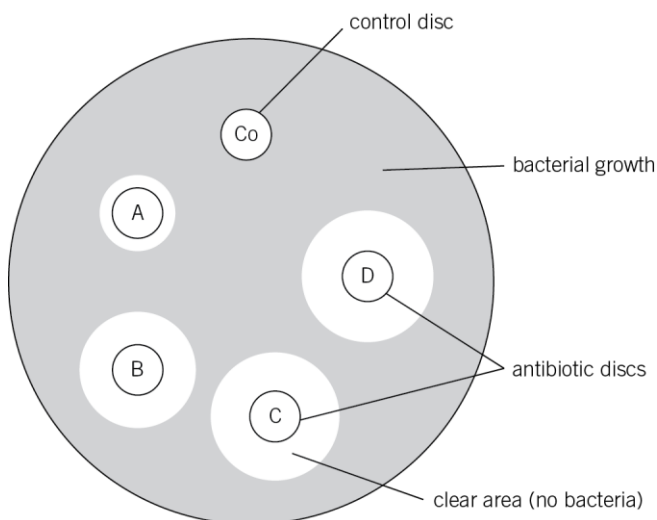
Scientist 2 – Inoculated agar jelly Petri dishes with MRSA. They then added the different antibiotics to the surface of the jelly. They left the dishes in a warm place then counted the number of colonies that grew on each dish.

### Results



Scientist 3 – Inoculated agar jelly Petri dishes with MRSA and left in a warm place to grow. They then added paper discs that has been soaked in each antibiotic to the dish and left again for 2 days.

### Results



### Question

- 1 Research was carried out on the effectiveness of a new flu drug. Patients who came to a doctor's surgery with flu were either given an injection containing the new drug or a placebo (an injection which contains no drug). Neither the doctor nor the patient knew which they had been given.

The patients were then monitored by the doctor every day until they had recovered.

The following table shows the results.

	Given the drug – Group A	Given a placebo – Group B
number of patients	32	26
mean age in years	39	55
number of days until they said they felt better	4.52	5.26

**a** Explain why a placebo was used in the trial.

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(1 mark)

b State one improvement that could be made to the method.

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(1 mark)

c Do the results show that the drug is effective at treating flu? Use the data to support your decision.

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(2 marks)