

CREATES Analysis Template

Experimental Test

Figure or Table Number:

"Official" title for this figure or table (from the caption):

Phage morons are dispersed among phage genomes

My (simplified, decoded, in regular language) title for this figure or table:

Phage morons are found in the genome and affect bacterial growth rate

The controls in this experiment are:

There didn't appear to be a control

They are represented (in which part of the chart or graph, or what figure panels?)

n/a

The experimental conditions are:

Bacterial strain growth with the presence of individual phage morons

They are represented as:

Different colored lines on the cell density graph

We need to compare the controls in with the experimentals in

to find out:

how the presence of phage morons affects bacterial growth rate (whether cell density increases, decreases, or remains the same)

When we make these comparisons, we conclude from this figure:

Most phage morons don't increase bacterial growth rate. In fact, JBD30-14 and JBD26-15 decrease bacterial growth rate in PA14 and JBD44-8 decreases bacterial growth rate in PAO1

Was the hypothesis supported? Why or why not?

No it was not, since the bacterial growth rate stayed the same in the presence of phage morons. In addition, three of the morons caused a decrease in bacterial growth rate. Since the researchers hypothesized that the presence of morons would allow for more growth, the figure shows that this was not the case.

The following issues are ones of concern to me (these can be things you don't understand, or criticisms of the method, questions for the authors, or anything else that comes to mind):

The researchers did not have an explicitly labeled control group. In addition, they use colors to differentiate each moron on the graph, but don't have a legend to determine which line corresponds to each line.

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Experimental Test

Figure or Table Number:

“Official” title for this figure or table (from the caption):

Phage morons increase resistance to further phage infection

My (simplified, decoded, in regular language) title for this figure or table:

Phage morons confer phage resistance

The controls in this experiment are:

There didn't appear to be any controls
Controls were implicit in that the yellow blocks indicated no change

They are represented (in which part of the chart or graph, or what figure panels?)

n/a

The experimental conditions are:

All the bacterial strains with morons included
Bacterial strains with morons being infected with new phages

They are represented as:

Different colored blocks in the figure
Dark blue - resistance
Light blue - partial resistance
Yellow - no change
Gray - unable to infect host

We need to compare the controls in **with the experimentals in**

to find out:

Whether or not the presence of phage morons affect bacteria's ability to fend off further phage infection.

When we make these comparisons, we conclude from this figure:

The presence of morons usually helped increase resistance to further phage infection, but it was dependent on the plasmid present in the bacteria and the moron that was included. It was also dependent on the phage used for infection.

Was the hypothesis supported? Why or why not?

The researchers hypothesized that the presence of phage morons would increase the resistance to future phage infection. This figure shows that for the most part, the presence of morons does lead to resistance or partial resistance of phage infection. Therefore, the hypothesis is supported.

The following issues are ones of concern to me (these can be things you don't understand, or criticisms of the method, questions for the authors, or anything else that comes to mind):

This figure was pretty clear to me however, the lack of controls makes it a little difficult to determine the validity of the results.

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Figure or Table Number:

“Official” title for this figure or table (from the caption):

Moron expression can cause changes in bacterial twitching motility, swimming motility, and biofilm production

My (simplified, decoded, in regular language) title for this figure or table:

The presence and expression of morons decrease motility while also affecting virulence

The controls in this experiment are:

3a - neg control knocking out the pili gene
3b - neg control knocking out the flagella gene
3c - neg control knocking out both genes
3d - bacterial strain with no moron and a knockout strain

They are represented (in which part of the chart or graph, or what figure panels?)

In each figure, they are represented by a specific column on a graph or gel

The experimental conditions are:

Bacterial strains with morons present

They are represented as:

Columns on each graph or gel for each figure

We need to compare the controls in with the experimentals in

3a

to find out:

That most morons decrease twitching motility in both the PA14 and PAO1 strains, however, JBD30-14, JBD5-15, and JBD26-31 appear to increase the motility of PA14 strains, but not as strong of a decrease as the knockout

We need to compare the controls in

3b

with the experimentals in

3b

to find out:

How the presence of morons affects swimming motility in all strains

We need to compare the controls in

3c

with the experimentals in

3c

to find out:

How biofilm production was affected. JBD23-13 appeared to very strongly increase biofilm formation in PAO1, while not doing so in PA14.

We need to compare the controls in

3d

with the experimentals in

3d

to find out:

How morons affect formation of pili

When we make these comparisons, we conclude from this figure:

3a - JBD30-14, JBD5-15, and JBD26-31 appear to increase the motility of PA14 strains, but not as strong of a decrease as the knockout
3b - The presence of morons appears to decrease swimming motility in all strains, but again, not as strongly as the knockout.

3c - JBD23-13 appeared to very strongly increase biofilm formation in PAO1, while not doing so in PA14. not having pili or flagella appears to reduce the ability to form biofilms as well, suggesting that it could be a reason that biofilm formation is low in the presence of morons.

3d - There is a reduction of flagella in cells that have the JBD44-8 moron expressed. Expression of JBD26-15 caused hyperpiliation. Strains that were non-twitching didn't have surface pili except for those with JBD26-15 and JBD30-4.

Was the hypothesis supported? Why or why not?

Yes the hypothesis was supported, since the researchers expected there to be a decrease in bacterial motility. However, they expected all loss of motility to be due to a loss of pili, which this experiment showed as not true in all cases.

The following issues are ones of concern to me (these can be things you don't understand, or criticisms of the method, questions for the authors, or anything else that comes to mind):

It would've been good to include a positive control to set a baseline. It appears as though the baseline is just implicit, but it would be good to make it explicit.

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Experimental Test

Figure or Table Number:

“Official” title for this figure or table (from the caption):

Phage morons lead to changes in phenotypes linked to virulence

My (simplified, decoded, in regular language) title for this figure or table:

Phage morons can lead to an increase in virulence

The controls in this experiment are:

The absence of morons and knockout strains (for a and b), c does not appear to have a control, and d's control is a strain with no morons

They are represented (in which part of the chart or graph, or what figure panels?)

A- as their own CTA-methylene blue plates
B- their own column on the gel
D- a line on the graph

The experimental conditions are:

The presence of phage morons

They are represented as:

A- as their own CTA-methylene blue plates
B- their own column on the gel
C- as columns on a bar graph
D- a line on the graph

We need to compare the controls in with the experimentals in

to find out:

How the presence of morons affects the production of rhamnolipids and how they compare to the production of rhamnolipids in bacteria without morons and in knockout strains

We need to compare the controls in with the experimentals in

to find out:

How the presence of morons affects the production of LPS and how they compare to the production of LPS in bacteria without morons and in knockout strains

We need to compare the controls in with the experimentals in

to find out:

How elastic activity compared in PA14 and PAO1 with the presence of morons

We need to compare the controls in with the experimentals in

to find out:

How morons affected bacterial virulence

When we make these comparisons, we conclude from this figure:

A-the presence of morons decreased the production of rhamnolipids, but not as much as the knockout strain
B- there was a loss in the O-specific antigen when JBD30-9 was expressed in both bacterial strains. This can help increase phage resistance
C-there was a significant decrease in the activity ratio for PAO1 phages when expressing JBD26-15 and JBD23-13.
D-when expressing JBD44-8, the bacterial strain is much more virulent than without the

moron, leading to a larger number of fly deaths faster.

Was the hypothesis supported? Why or why not?

Yes the hypothesis was supported, as the researchers expected the virulence of these bacteria to increase in the presence of morons.

The following issues are ones of concern to me (these can be things you don't understand, or criticisms of the method, questions for the authors, or anything else that comes to mind):

Overall, these figures were easy to interpret. Again, it seems like some of the controls are implicit rather explicit which makes it hard to interpret.

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Figure or Table Number:

"Official" title for this figure or table (from the caption):

Phage morons are actively expressed from the lysogen

My (simplified, decoded, in regular language) title for this figure or table:

The lysogens express phage morons

The controls in this experiment are:

Neg control - no moron present
Pos control - JBD26 present

They are represented (in which part of the chart or graph, or what figure panels?)

Figure 2b - as colored blocks

The experimental conditions are:

The deletion of genes JBD26-61 and JBD26-31

They are represented as:

Figure 2b - as colored blocks

We need to compare the controls in with the experimentals in

to find out:

Which genes are being expressed from the prophage during late exponential phase

We need to compare the controls in 5b with the experimentals in

5b

to find out:

How the presence and deletions of specific moron genes affect phage susceptibility

When we make these comparisons, we conclude from this figure:

There are many genes that are actively expressed in JBD26 when the bacteria are in late exponential phase.

The deletion of JBD26-61 causes a slight decrease in phage resistance, but the decrease of both studied genes causes a higher decrease in phage resistance.

Was the hypothesis supported? Why or why not?

The hypothesis was supported since the researchers expected the expression of these genes to confer phage resistance. The deletion of these genes showed how phage resistance decreased, suggesting the moron's necessity in helping protect bacteria from further phage infection.

The following issues are ones of concern to me (these can be things you don't understand, or criticisms of the method, questions for the authors, or anything else that comes to mind):

This figure was pretty easy to interpret, so I didn't really have any questions or concerns.