

Paper Reference(s) 9BI0/01  
Pearson Edexcel Level 3 GCE

## Biology B

Advanced

PAPER 1: Advanced Biochemistry, Microbiology and Genetics

Wednesday 7 June 2023 – Afternoon

## Diagram Booklet

In the boxes below, write your name, centre number and candidate number.

|                         |  |  |  |  |  |
|-------------------------|--|--|--|--|--|
| <b>Surname</b>          |  |  |  |  |  |
| <b>Other names</b>      |  |  |  |  |  |
| <b>Centre Number</b>    |  |  |  |  |  |
| <b>Candidate Number</b> |  |  |  |  |  |

## INSTRUCTIONS

There may be spare copies of some diagrams in case you need them.

**THIS DIAGRAM BOOKLET MUST BE RETURNED WITH THE QUESTION PAPER AT THE END OF THE EXAMINATION.**

## Contents

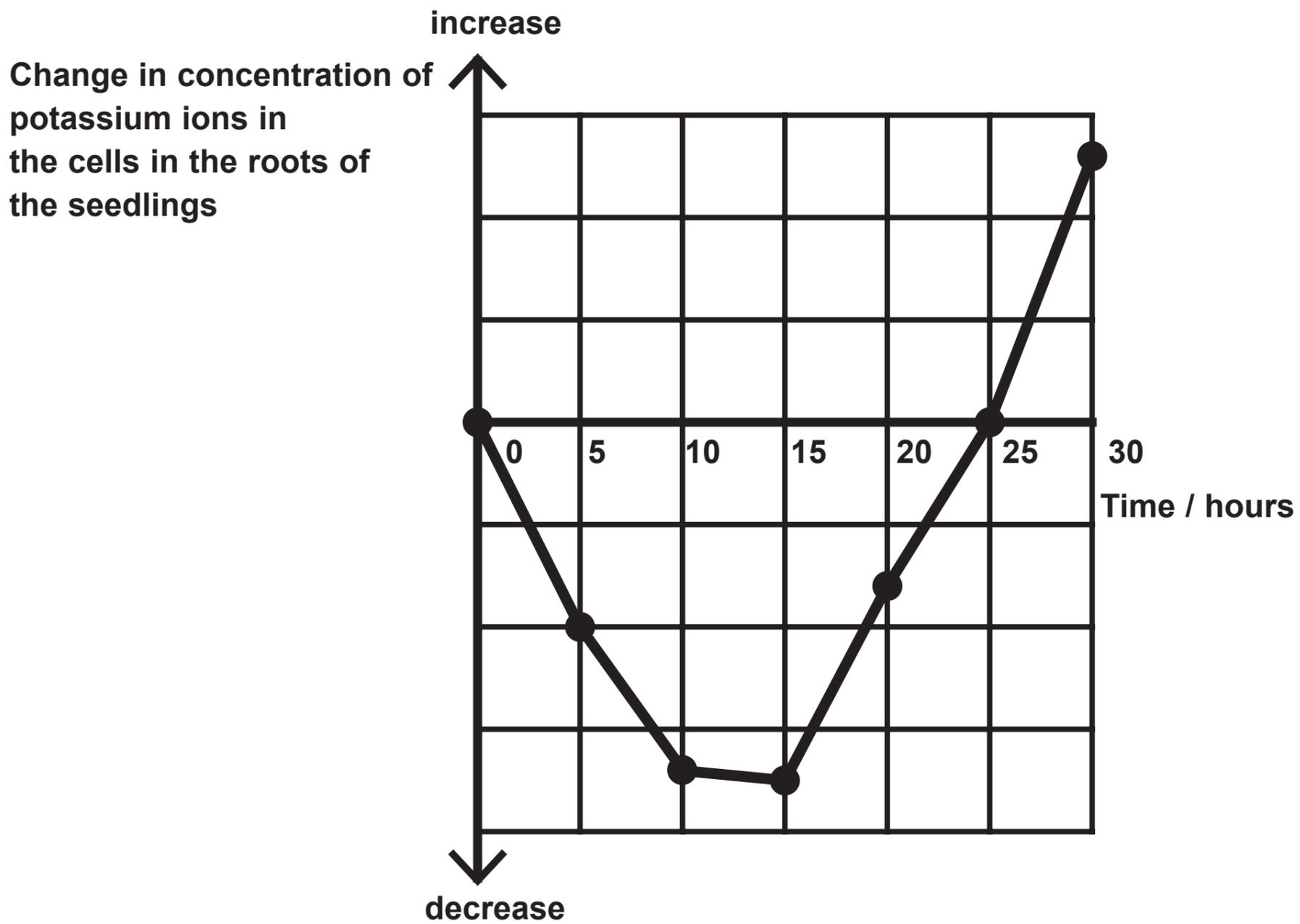
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### Spare copies

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## Question 1(b)



## Question 2(a)

| <b>Characteristic</b>             | <b>Organisms in the domain Archaea</b> |
|-----------------------------------|--|
| <b>membrane-enclosed nucleus</b>  | <b>absent</b>                          |
| <b>peptidoglycan in cell wall</b> | <b>absent</b>                          |
| <b>ribosomes</b>                  | <b>70S</b>                             |

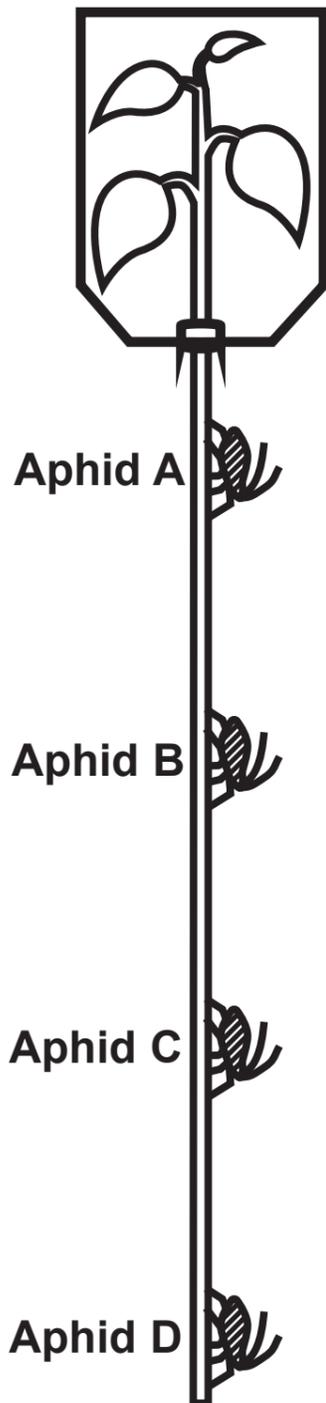
## Question 2(b)

| <b>Enzyme</b> | <b>Location in the cell</b> | <b>Substrate</b>                    | <b>Role of enzyme</b>      |
|---------------|-----------------------------|-------------------------------------|----------------------------|
| <b>AK1</b>    | <b>cytoplasm</b>            | <b>adenosine triphosphate (ATP)</b> | <b>transfers phosphate</b> |
| <b>AK3</b>    | <b>mitochondria</b>         | <b>guanosine triphosphate (GTP)</b> | <b>transfers phosphate</b> |

## Question 3(b)

| Statement                        | Type of tissue           |                          |                          |                          |
|----------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                  | both xylem and phloem    | xylem only               | phloem only              | neither xylem nor phloem |
| Contain sieve plates             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Have cellulose in the cell walls | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Have mitochondria                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

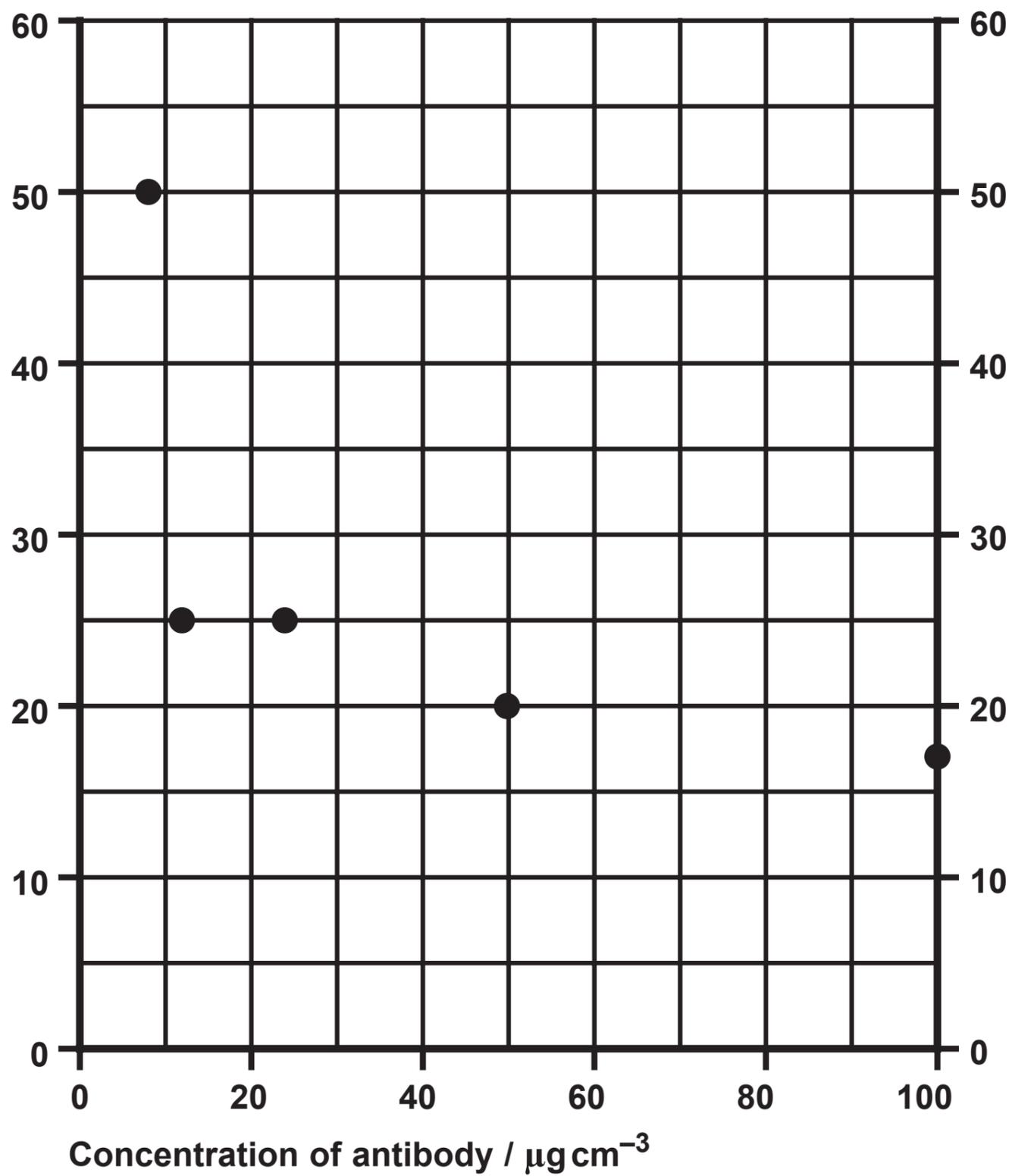
## Question 3(c)(i)



1. The leaves of a plant are covered with a glass chamber containing radioactive carbon dioxide.
2. The plant produces radioactive sugars by photosynthesis.
3. Aphids, A, B, C and D are attached to the stem and allowed to feed on the contents of the phloem.
4. The aphids are analysed to determine the time at which radioactivity first appeared in their bodies.

## Question 5(b)(ii)

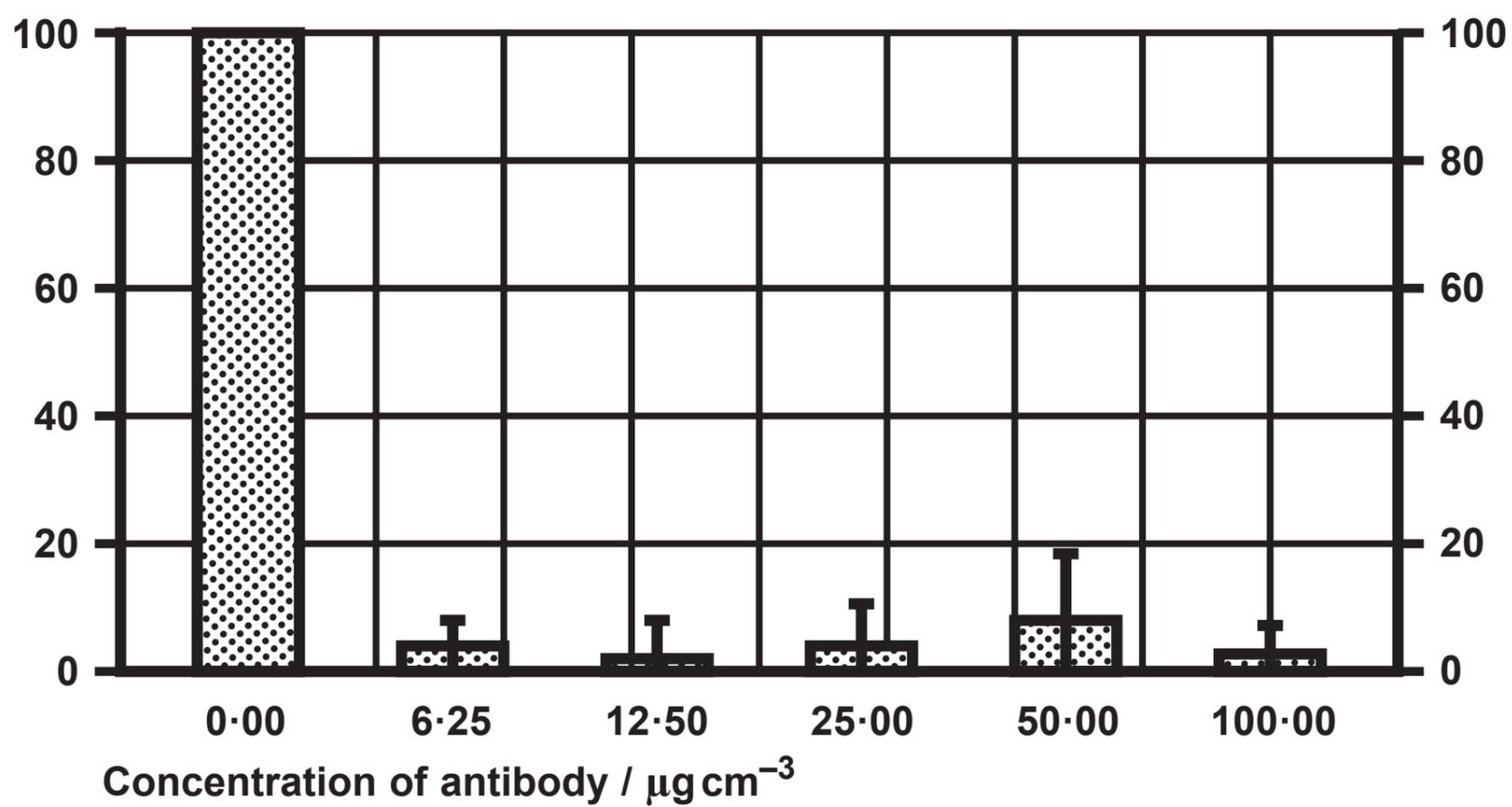
Time taken for 100%  
agglutination / secs



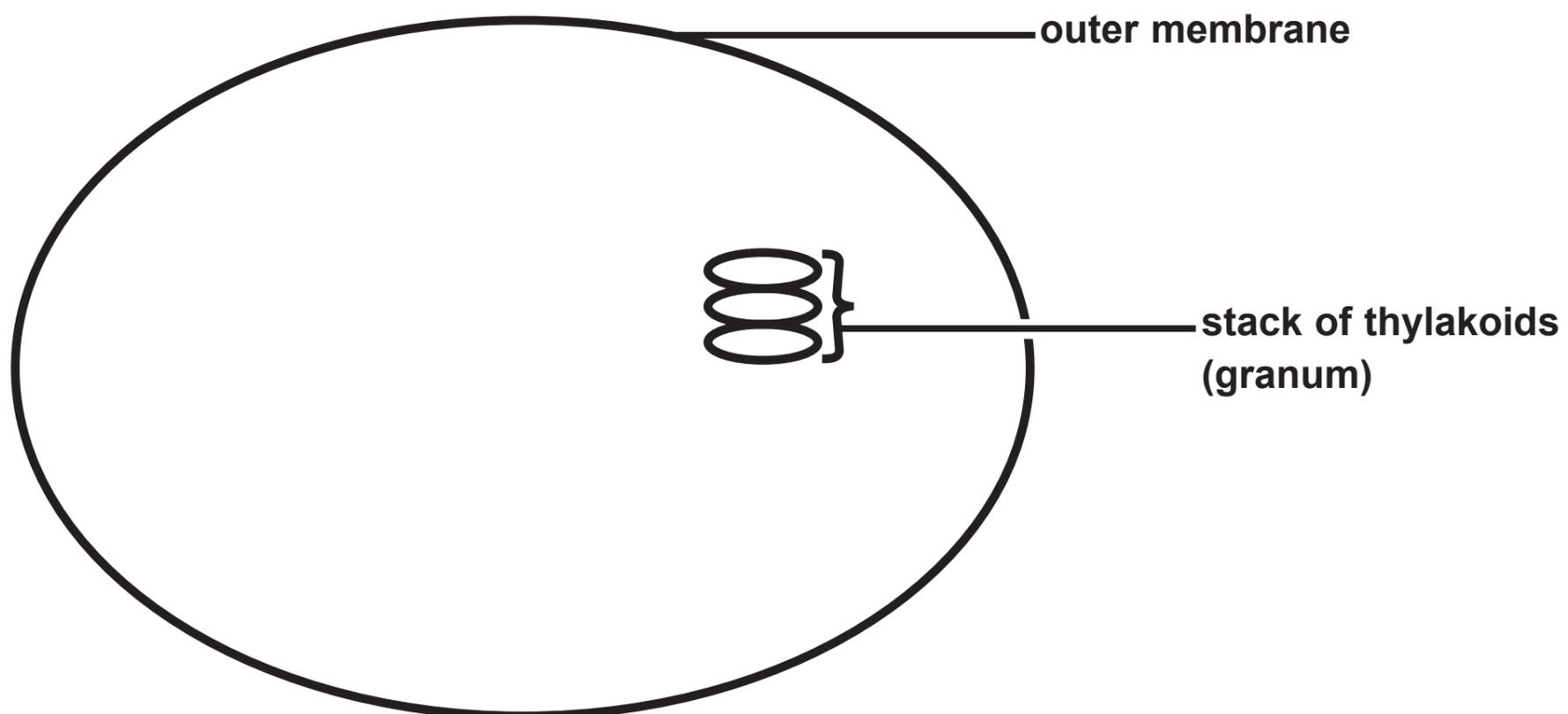
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Question 5(b)(ii) continued.

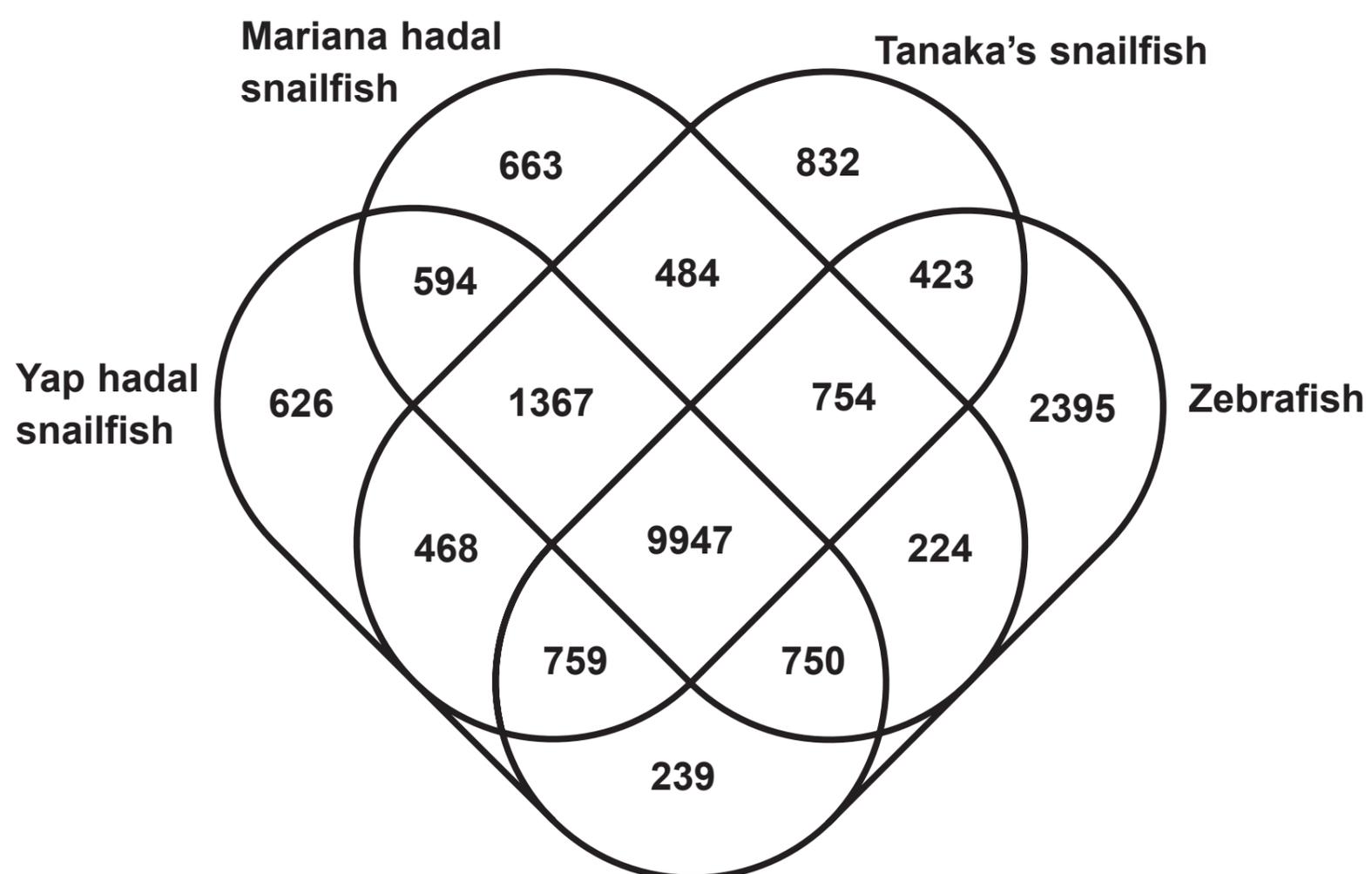
Percentage of sperm cells that escaped  
compared with the control with no  
antibody (%)



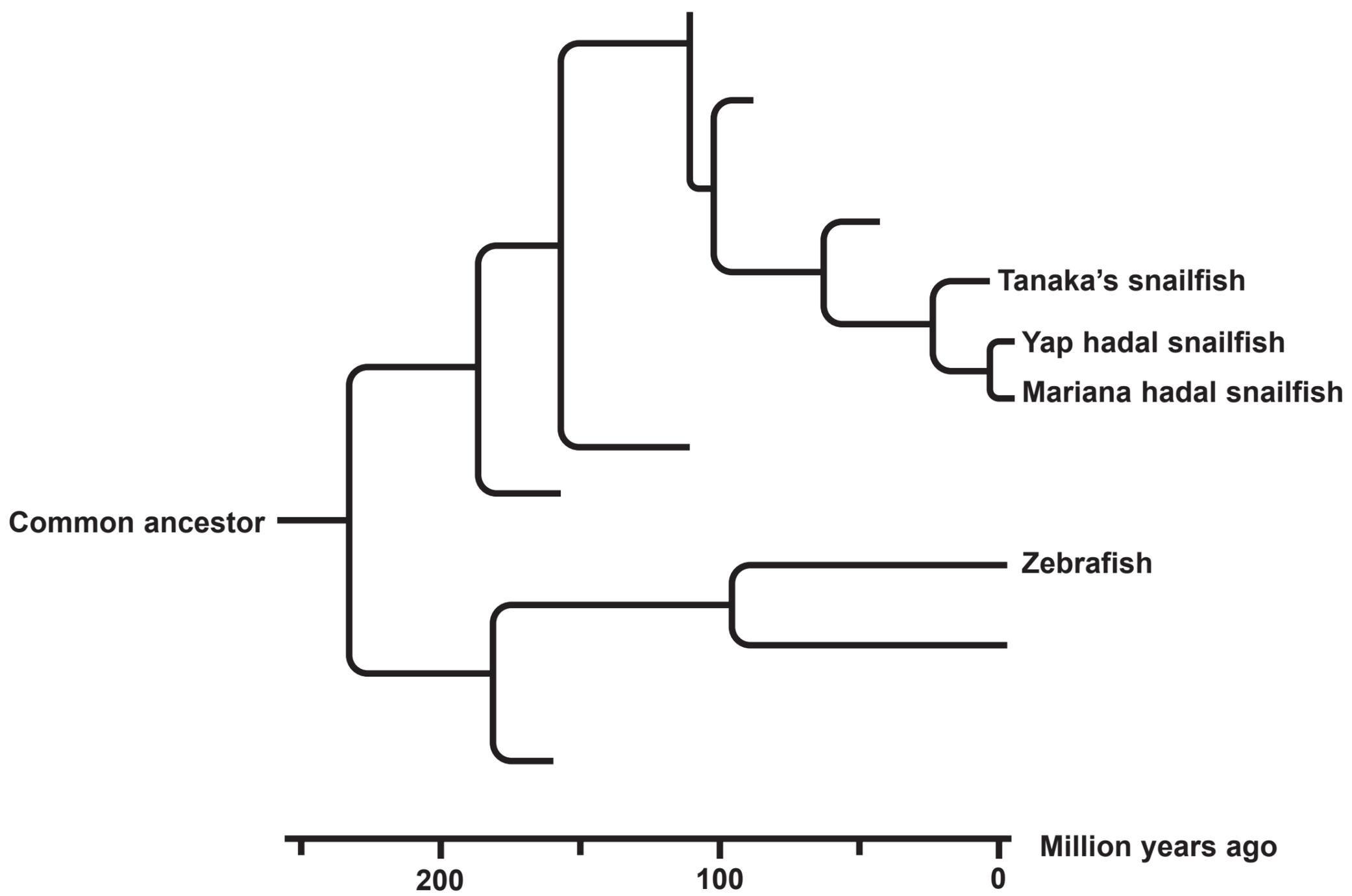
## Question 6(a)



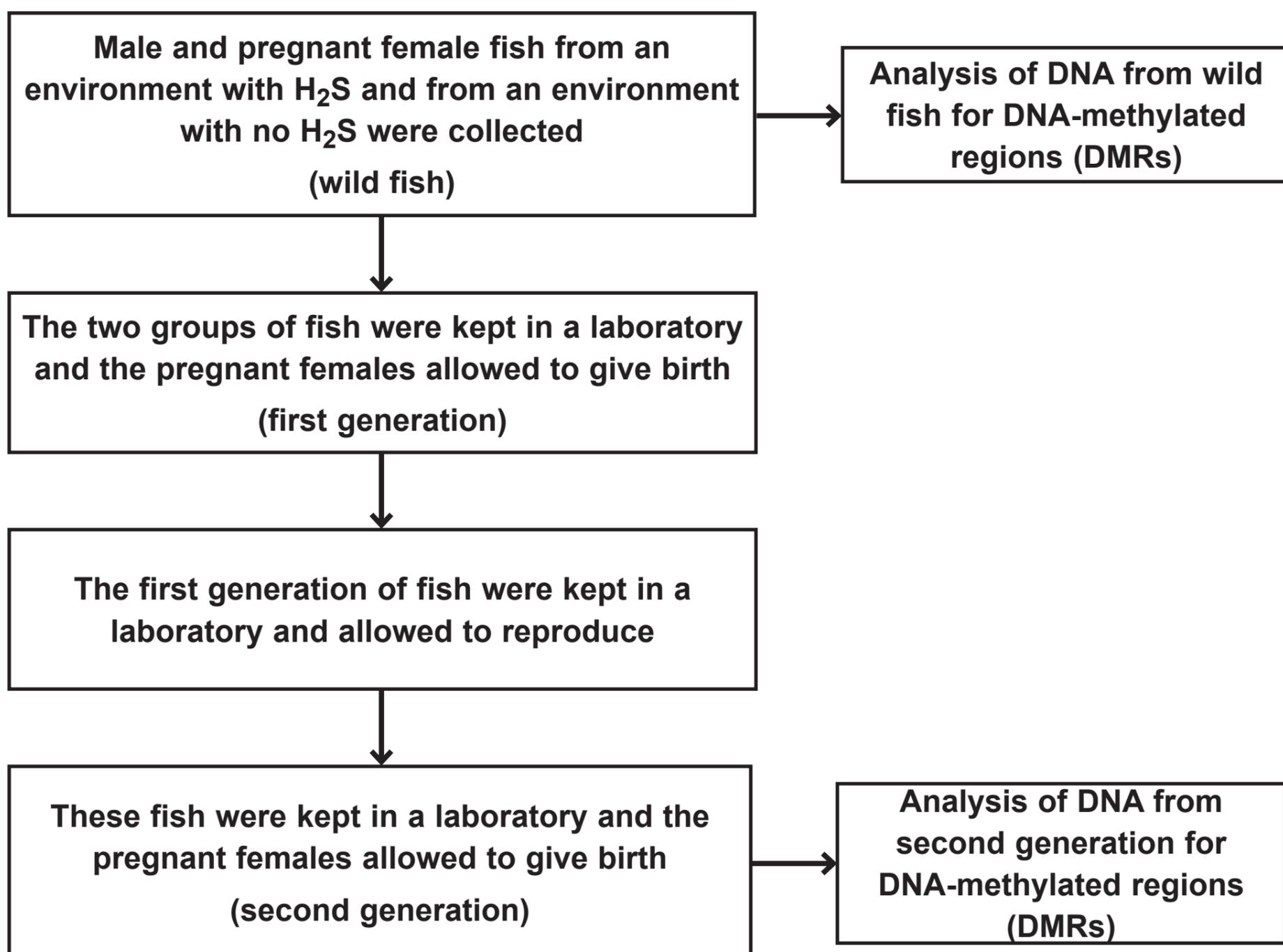
## Question 7(b)(ii)



## Question 7(b)(iii)

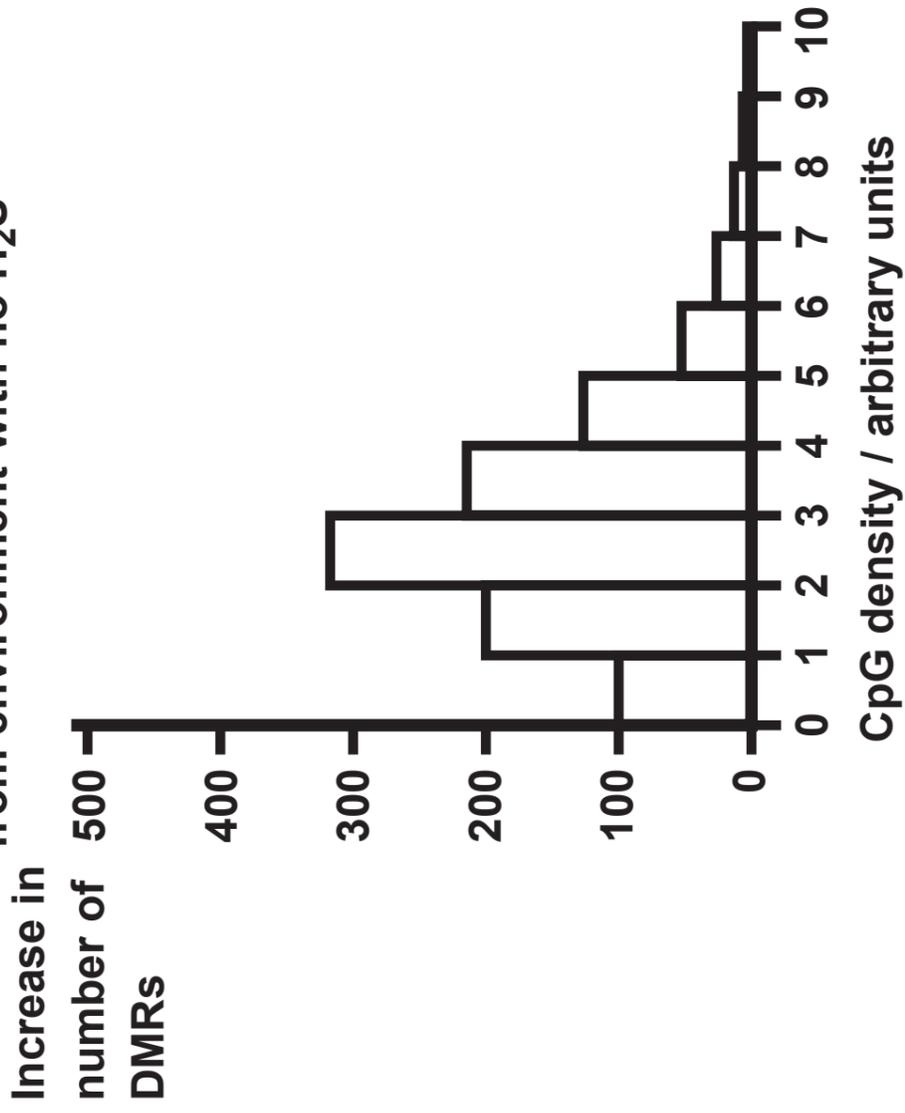


## Question 9(c)

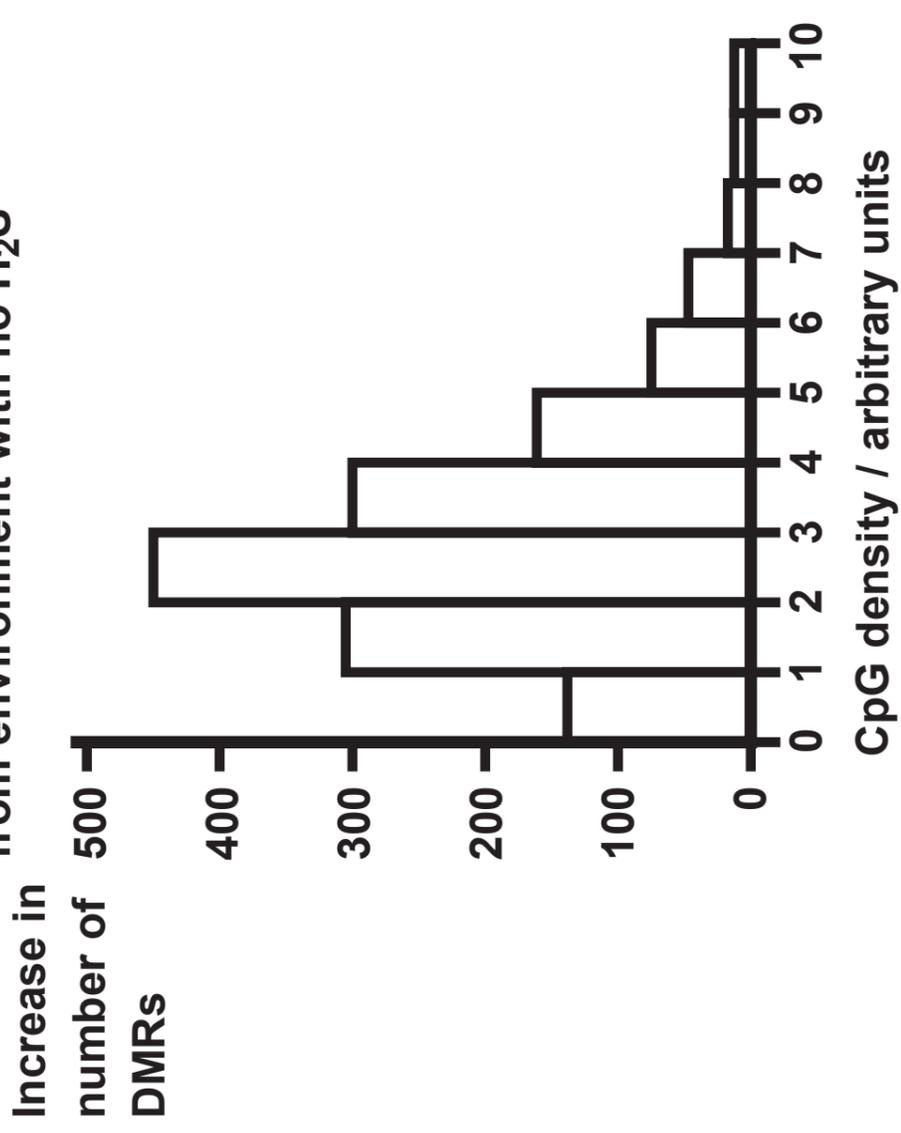


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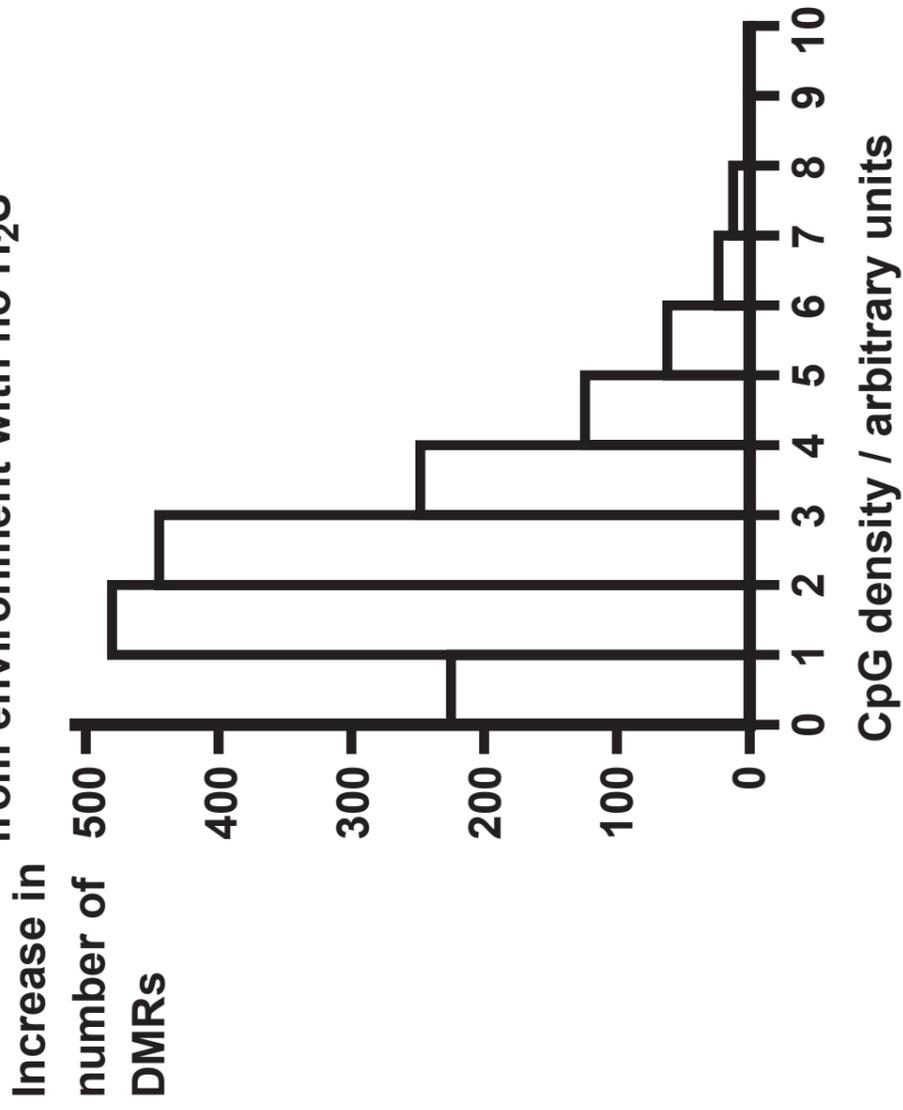
**Graph 1: Wild male fish**  
 fish from environment with H<sub>2</sub>S compared with fish  
 from environment with no H<sub>2</sub>S



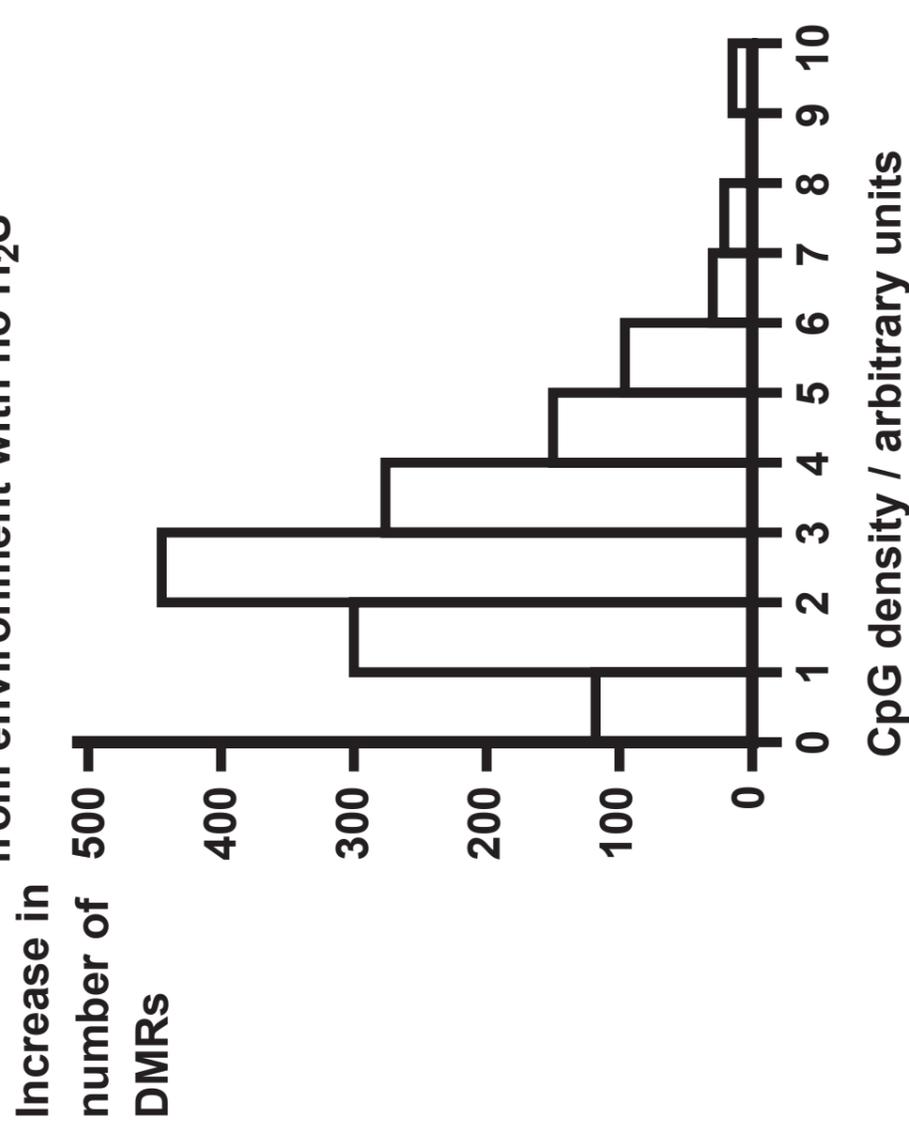
**Graph 2: Wild female fish**  
 fish from environment with H<sub>2</sub>S compared with fish  
 from environment with no H<sub>2</sub>S



**Graph 3: Second generation male fish**  
fish from environment with H<sub>2</sub>S compared with fish  
from environment with no H<sub>2</sub>S



**Graph 4: Second generation female fish**  
fish from environment with H<sub>2</sub>S compared with fish  
from environment with no H<sub>2</sub>S



## Question 6(a)

