

**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**

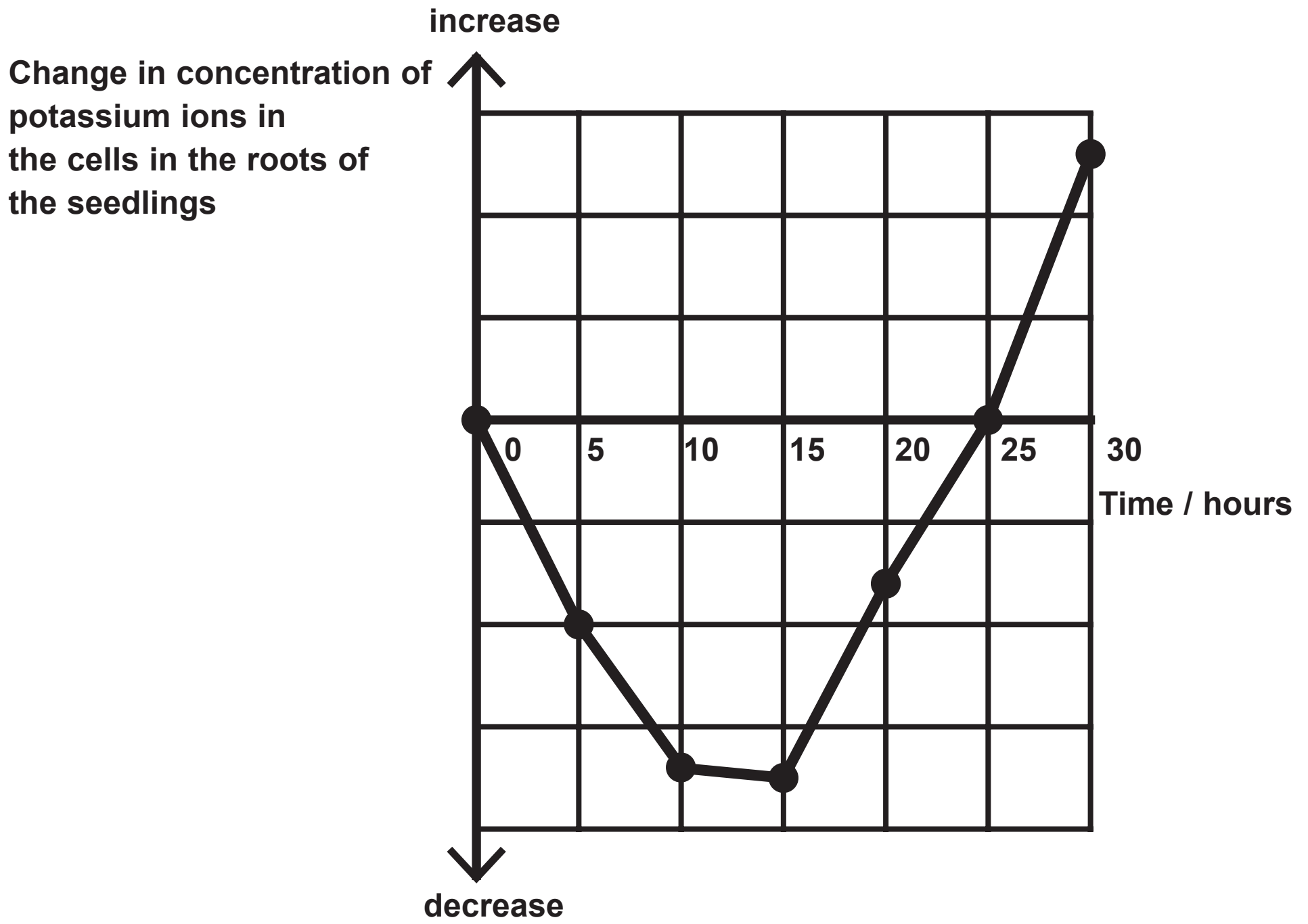
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**Spare copies**

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## Question 1(b)



Question 2(a)

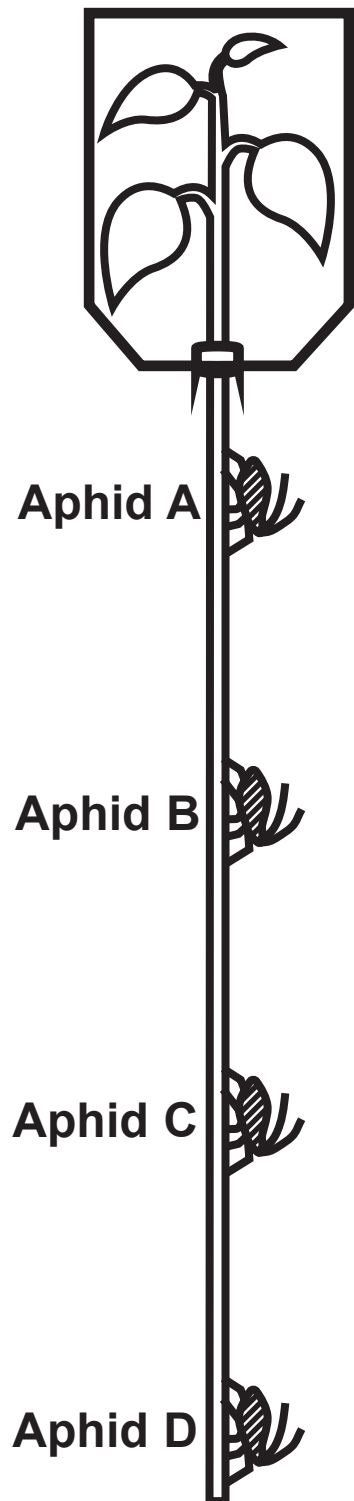
Characteristic	Organisms in the domain Archaea
membrane-enclosed nucleus	absent
peptidoglycan in cell wall	absent
ribosomes	70S

Question 2(b)

Enzyme	Location in the cell	Substrate	Role of enzyme
AK1	cytoplasm	adenosine triphosphate (ATP)	transfers phosphate
AK3	mitochondria	guanosine triphosphate (GTP)	transfers phosphate

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"/>

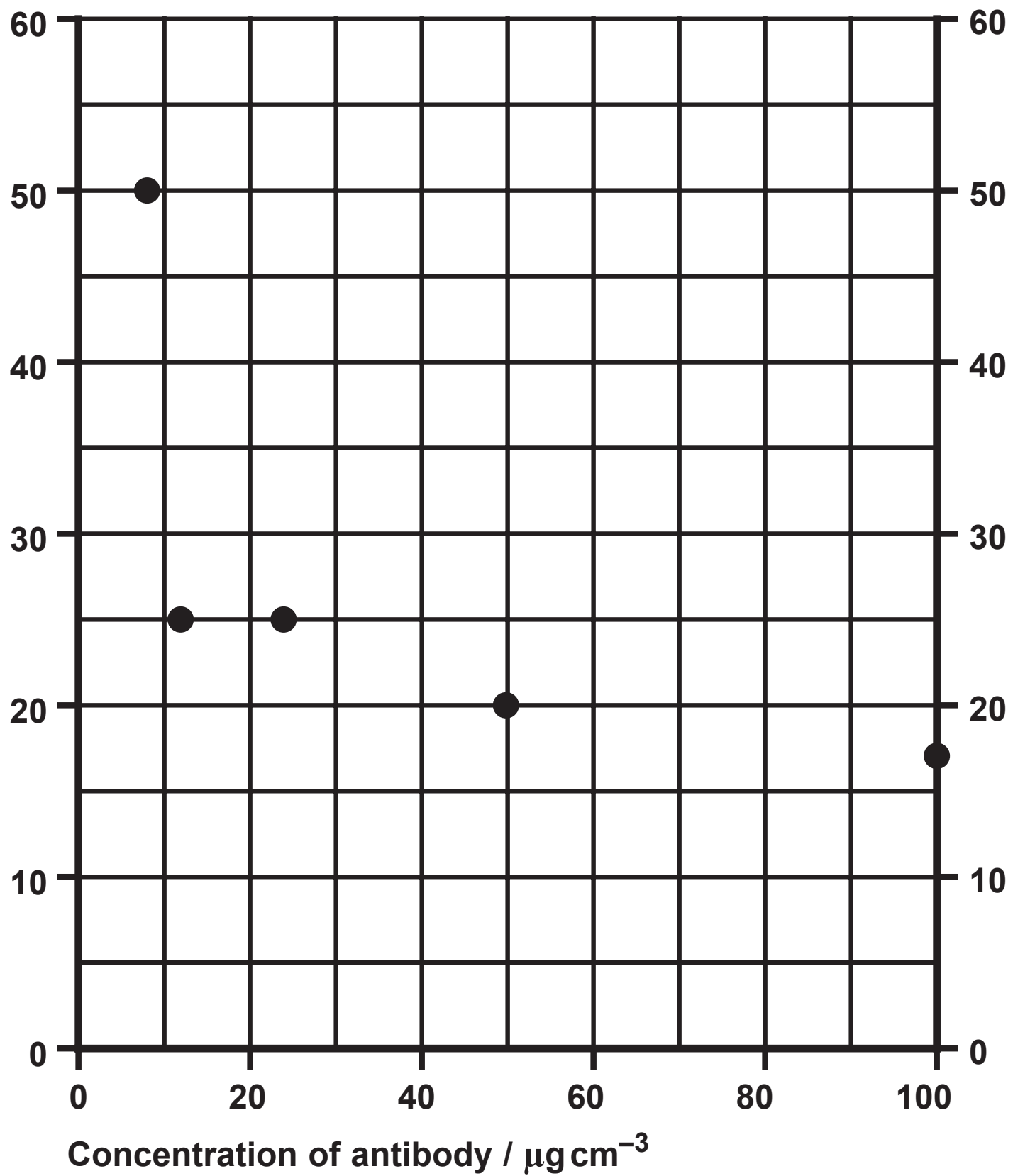
**Question 3(c)(i)**

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)

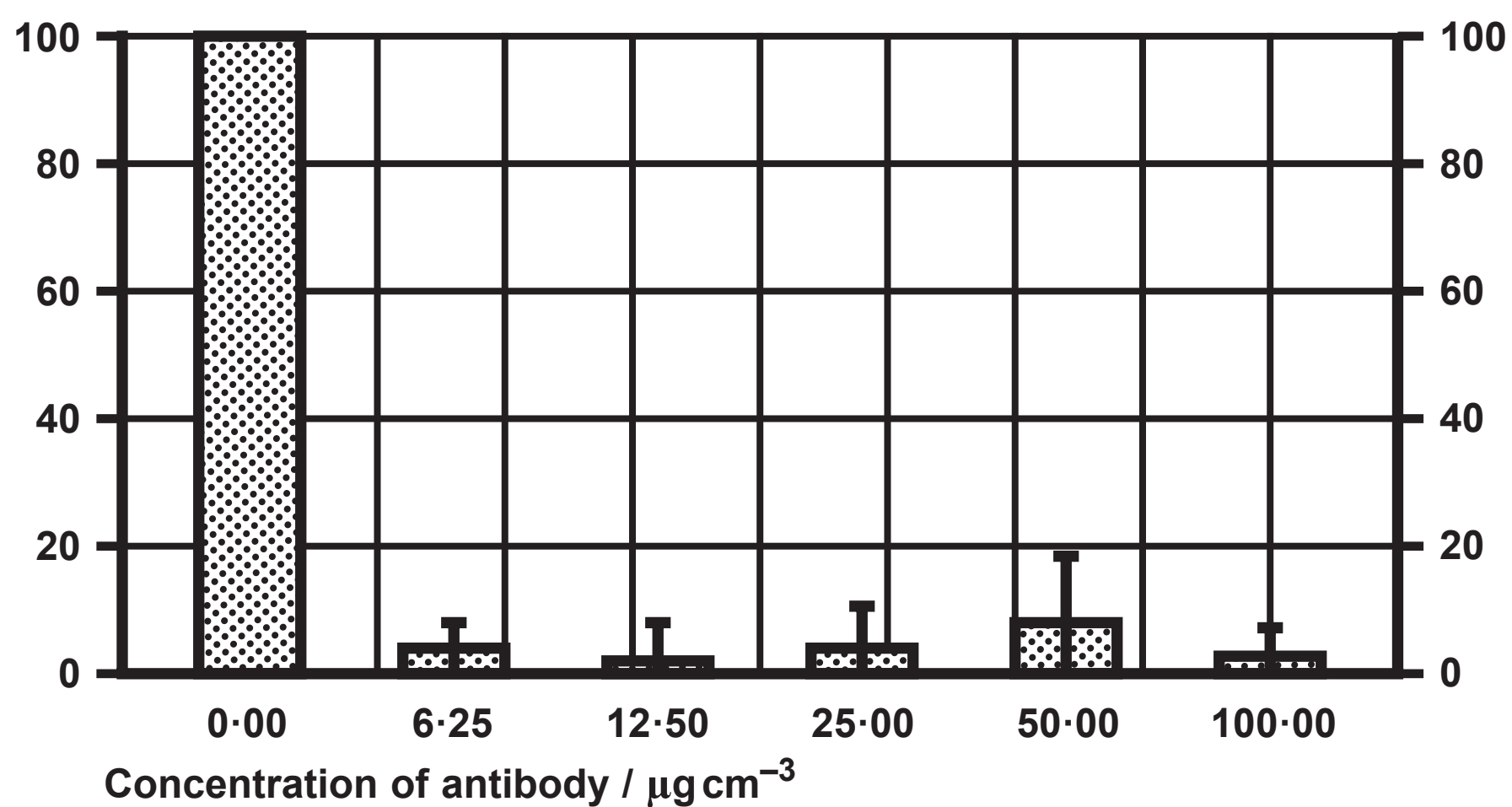
Time taken for 100%  
agglutination / secs



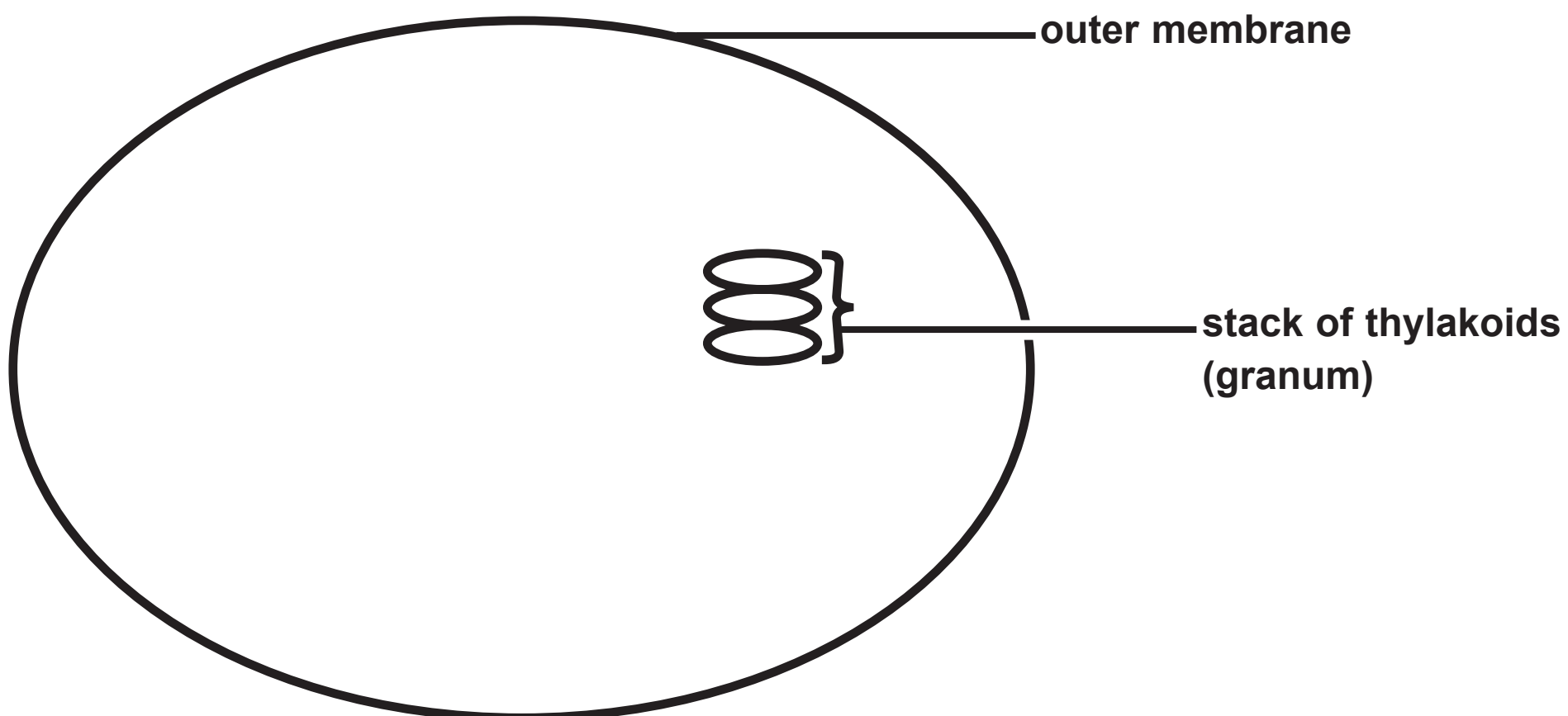
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Question 5(b)(ii) continued.

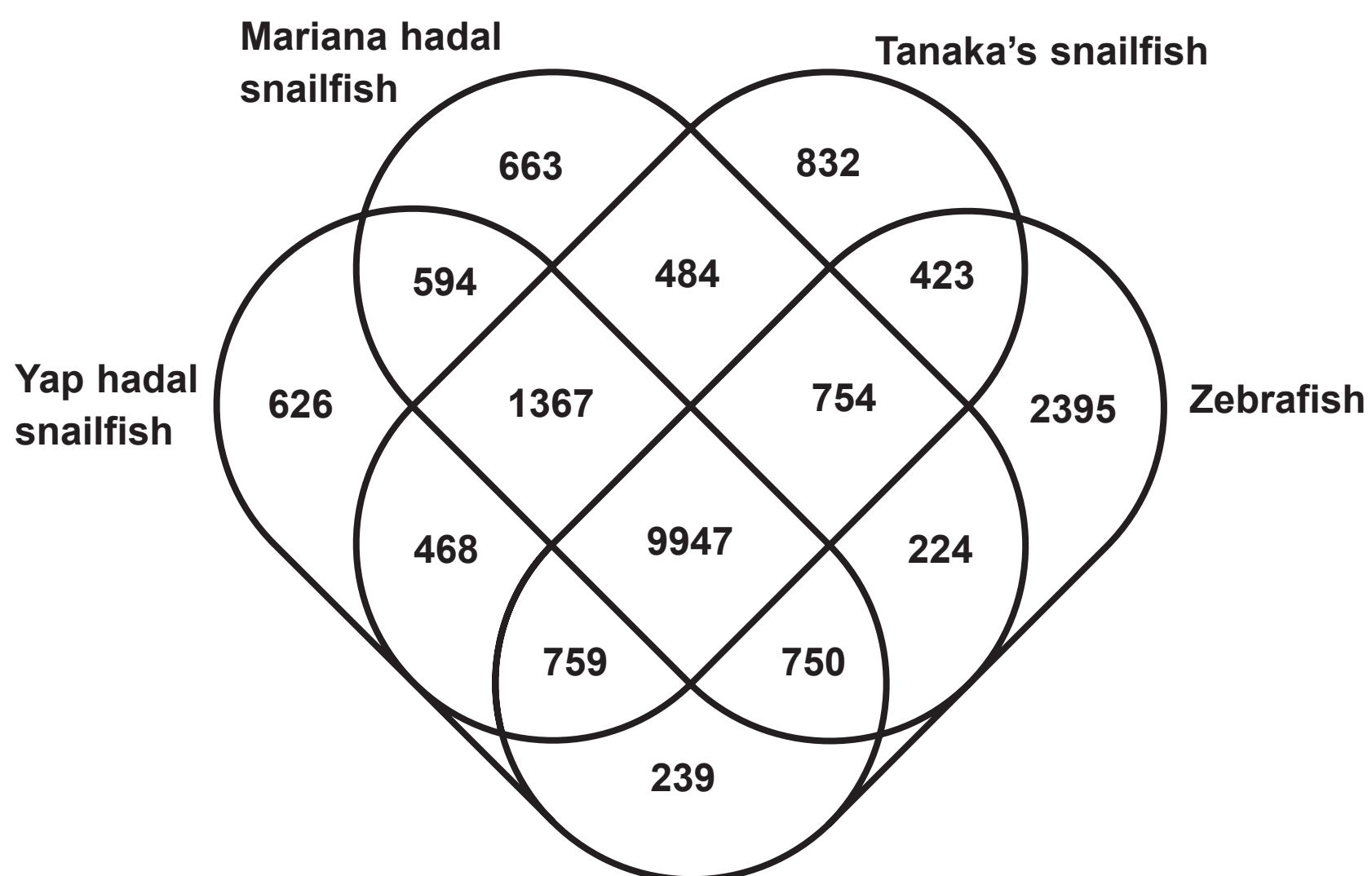
Percentage of sperm cells that escaped  
compared with the control with no  
antibody (%)



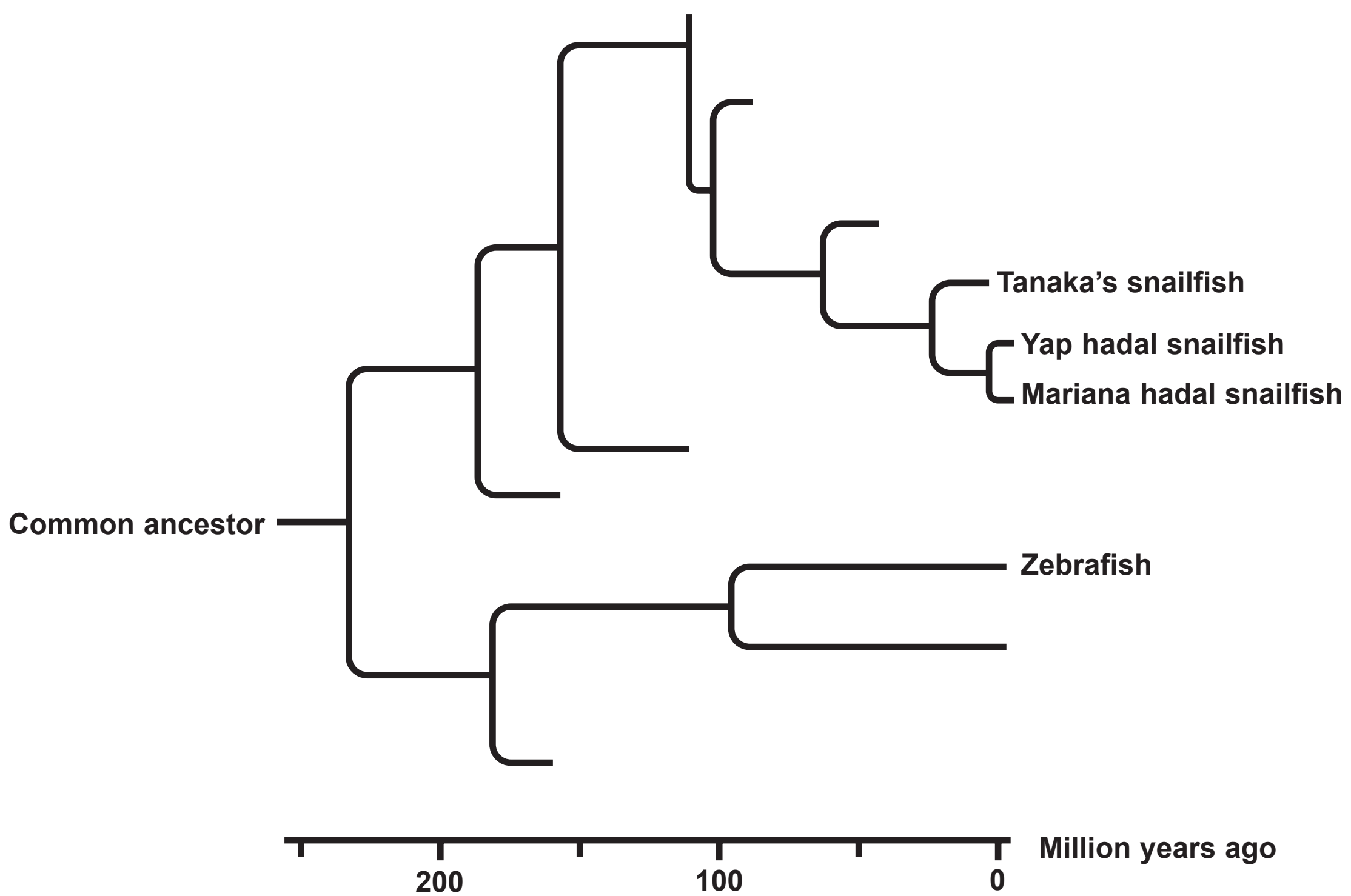
## Question 6(a)



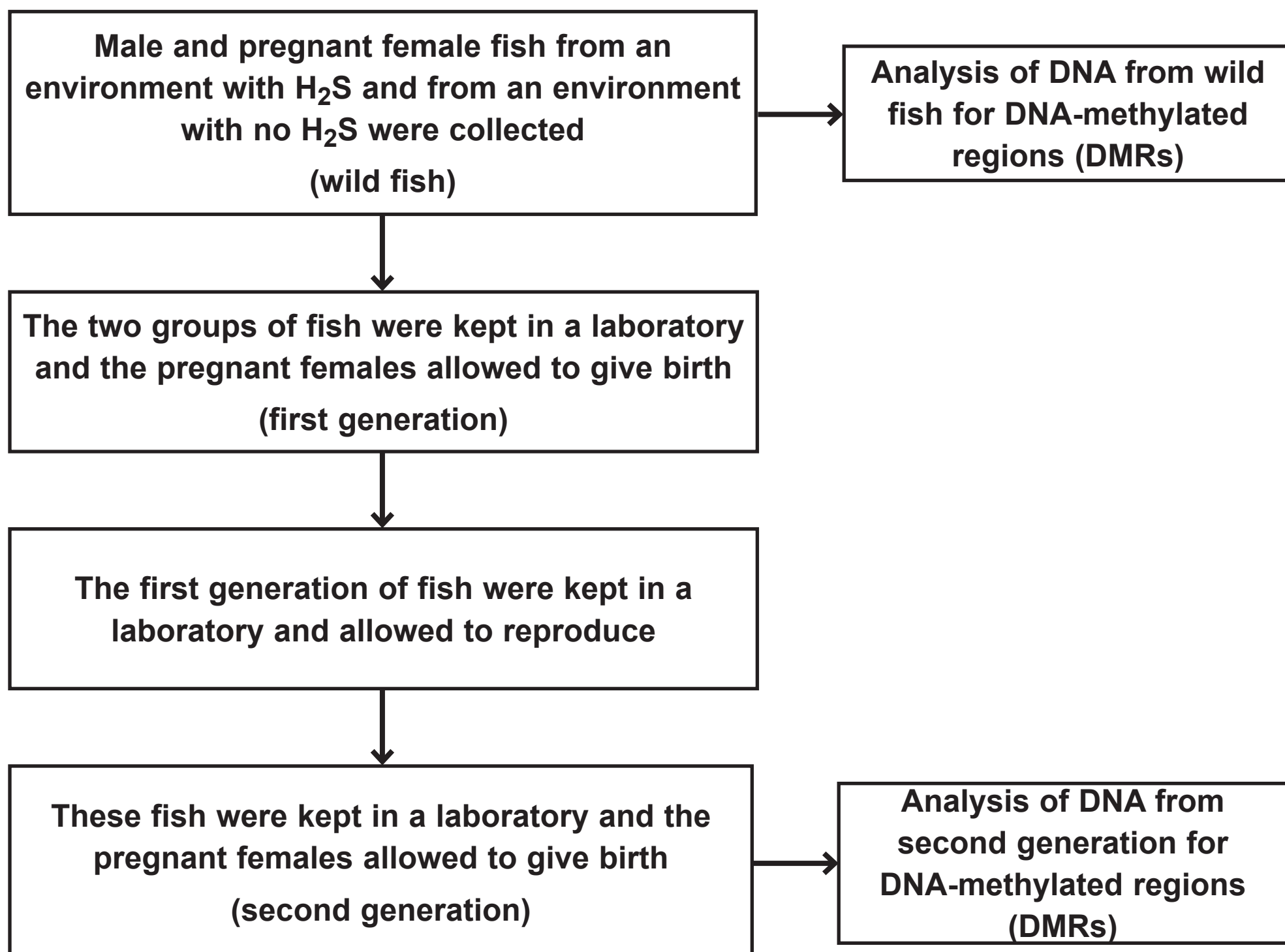
## Question 7(b)(ii)



## Question 7(b)(iii)

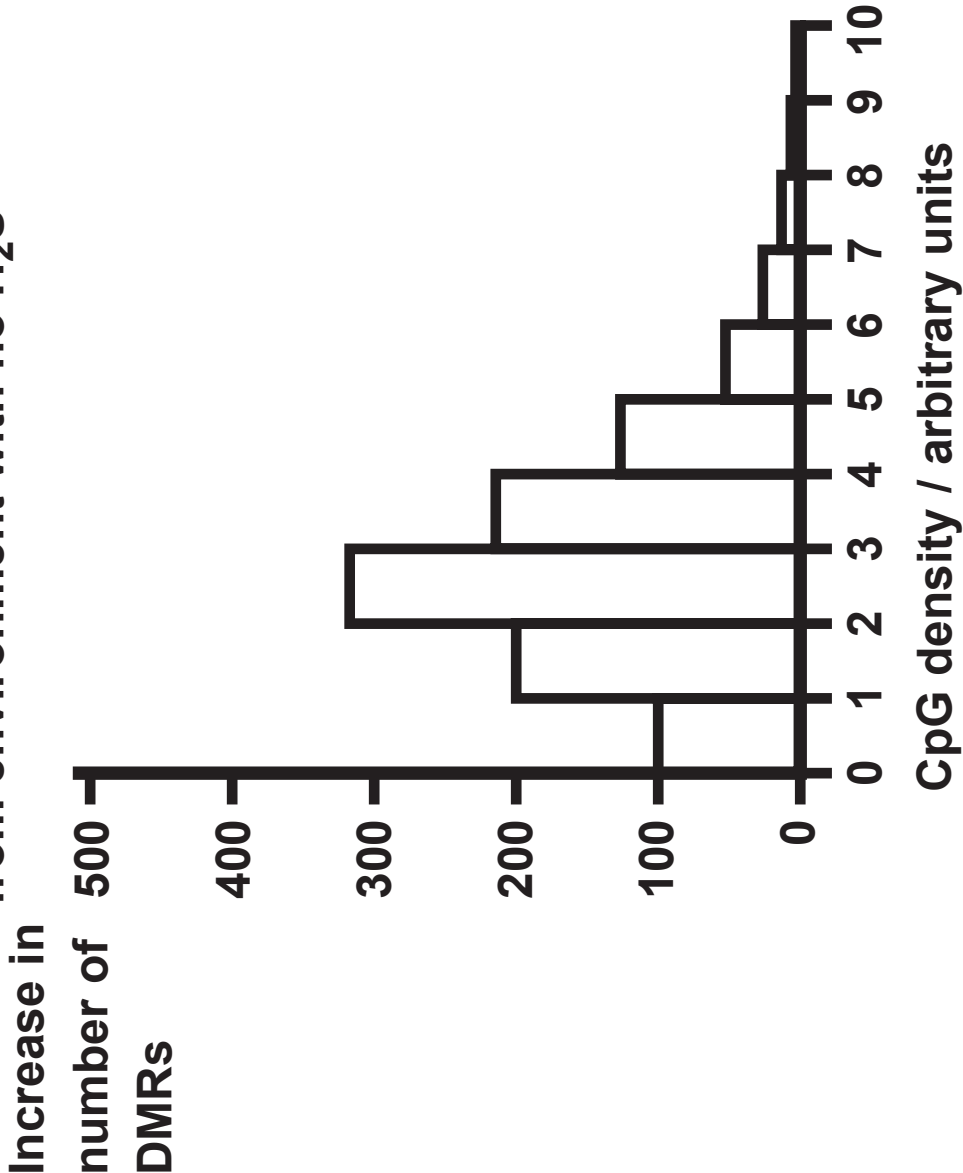


## Question 9(c)

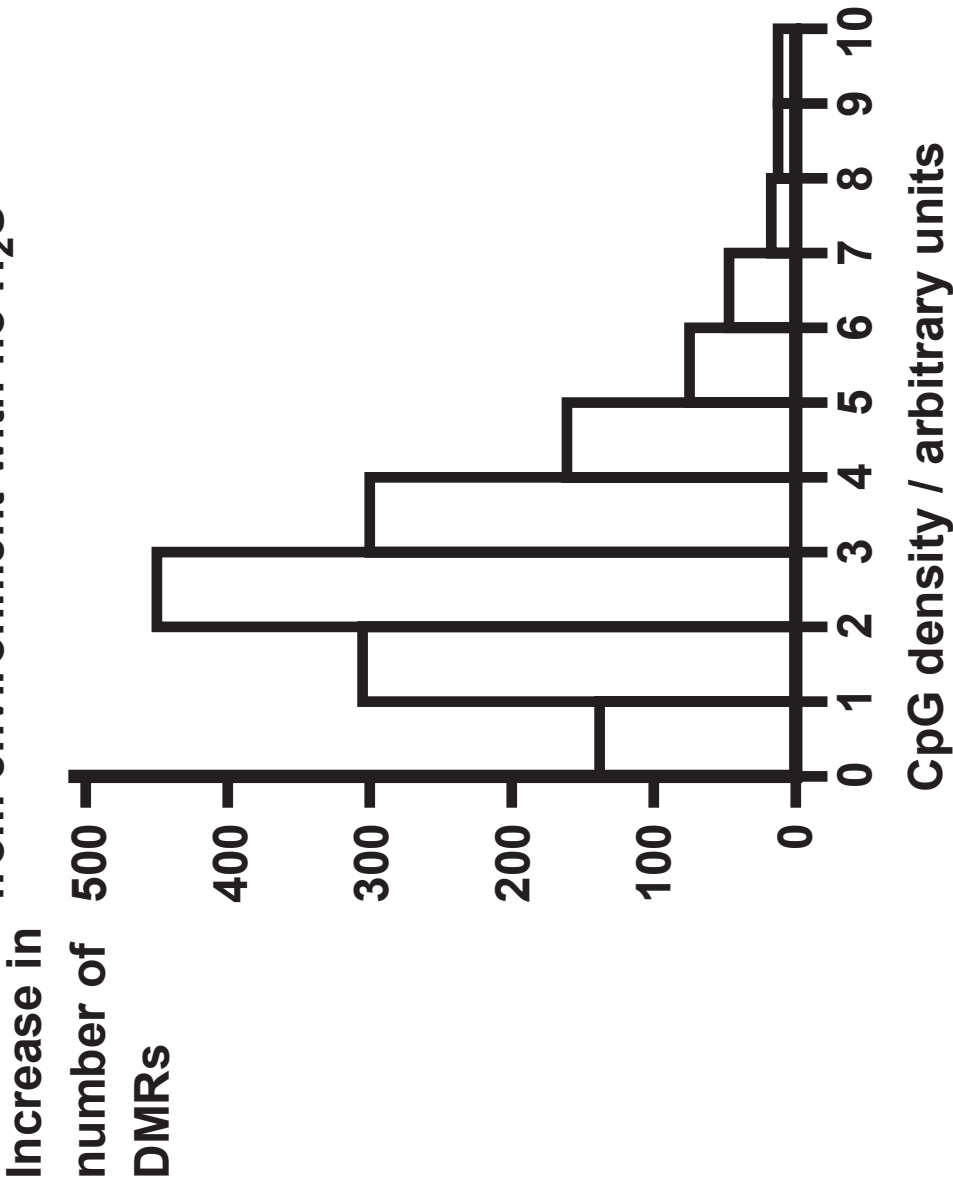


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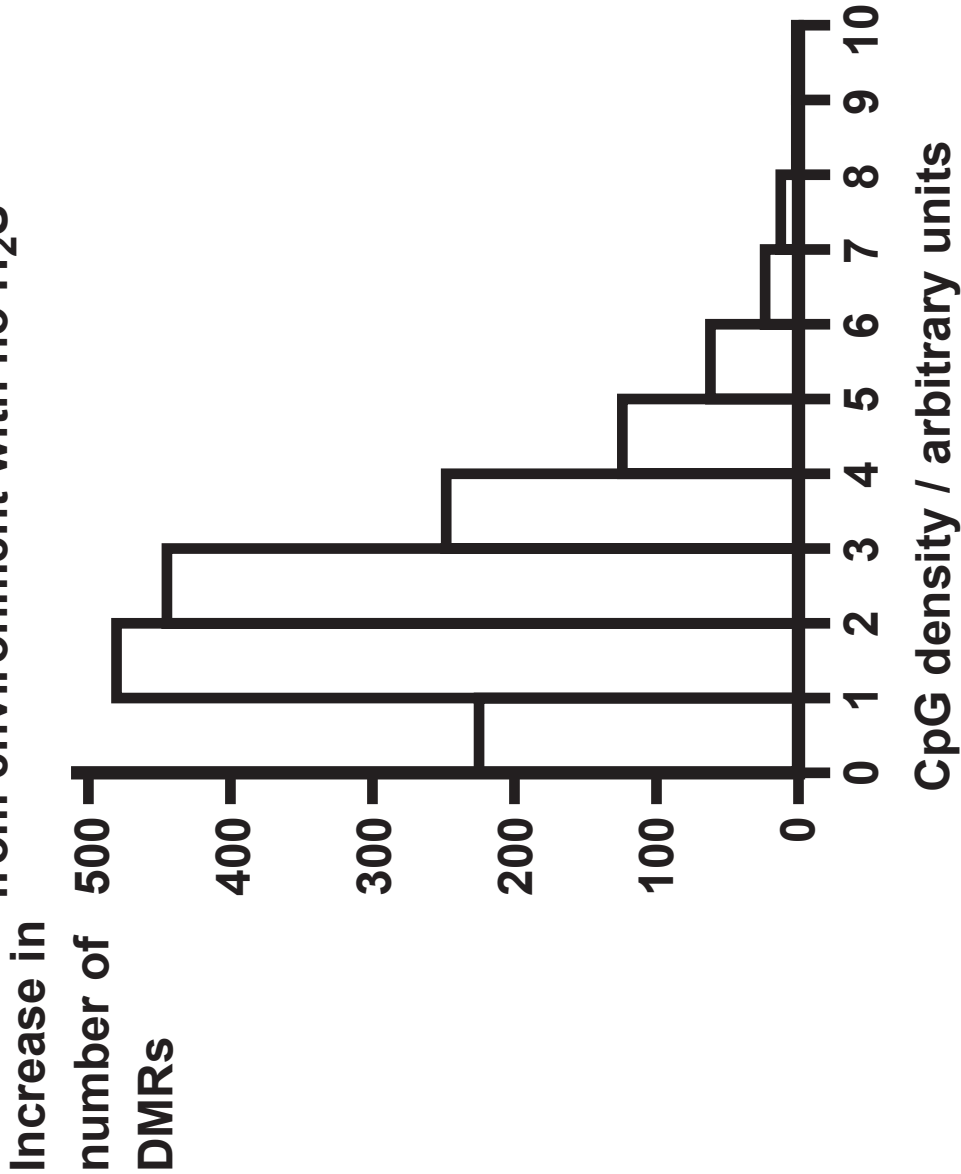
**Graph 1: Wild male fish**  
fish from environment with H<sub>2</sub>S compared with fish  
from environment with no H<sub>2</sub>S



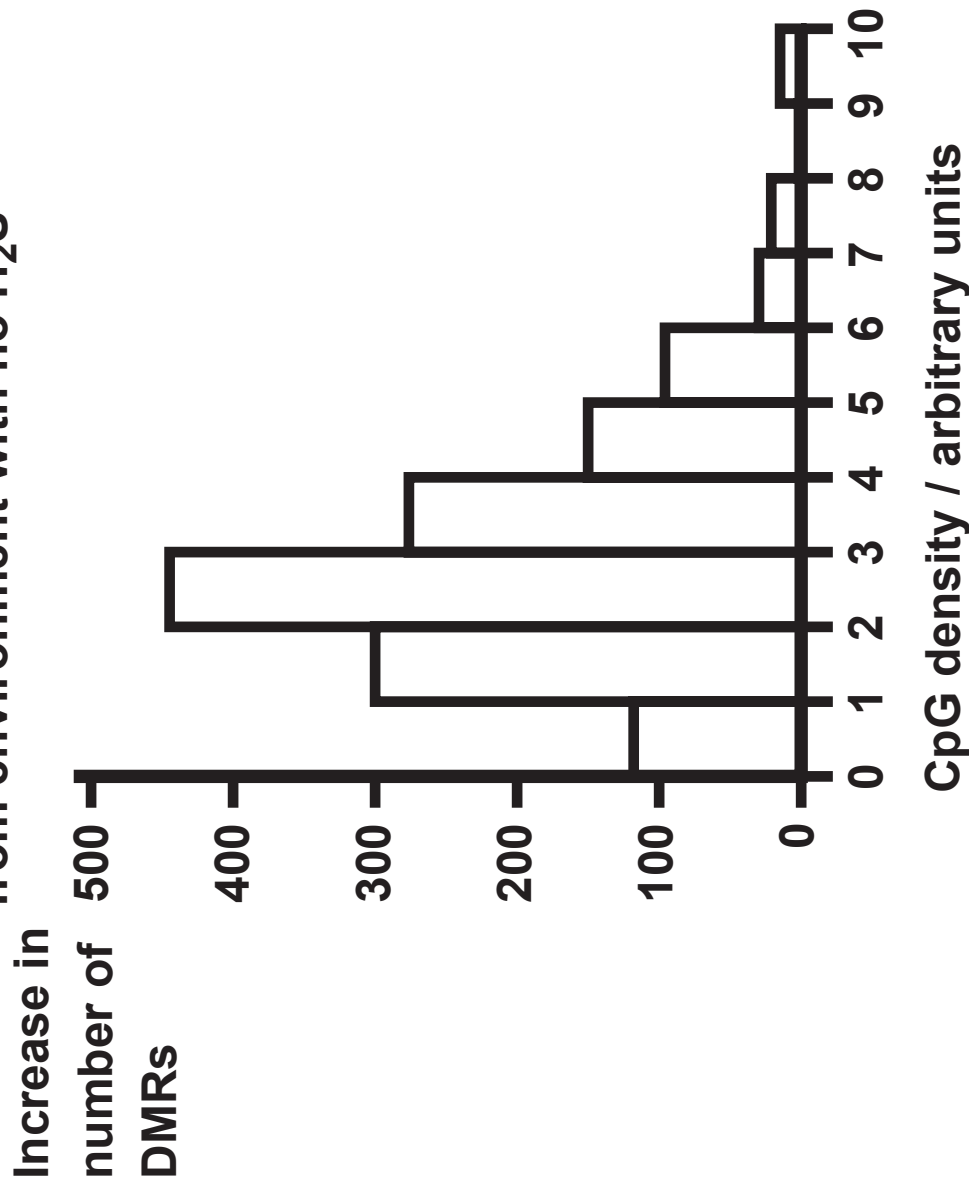
**Graph 2: Wild female fish**  
fish from environment with H<sub>2</sub>S compared with fish  
from environment with no H<sub>2</sub>S



**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)

