

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.

Surname					
Other names					
Centre Number					
Candidate Number					

## 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.**

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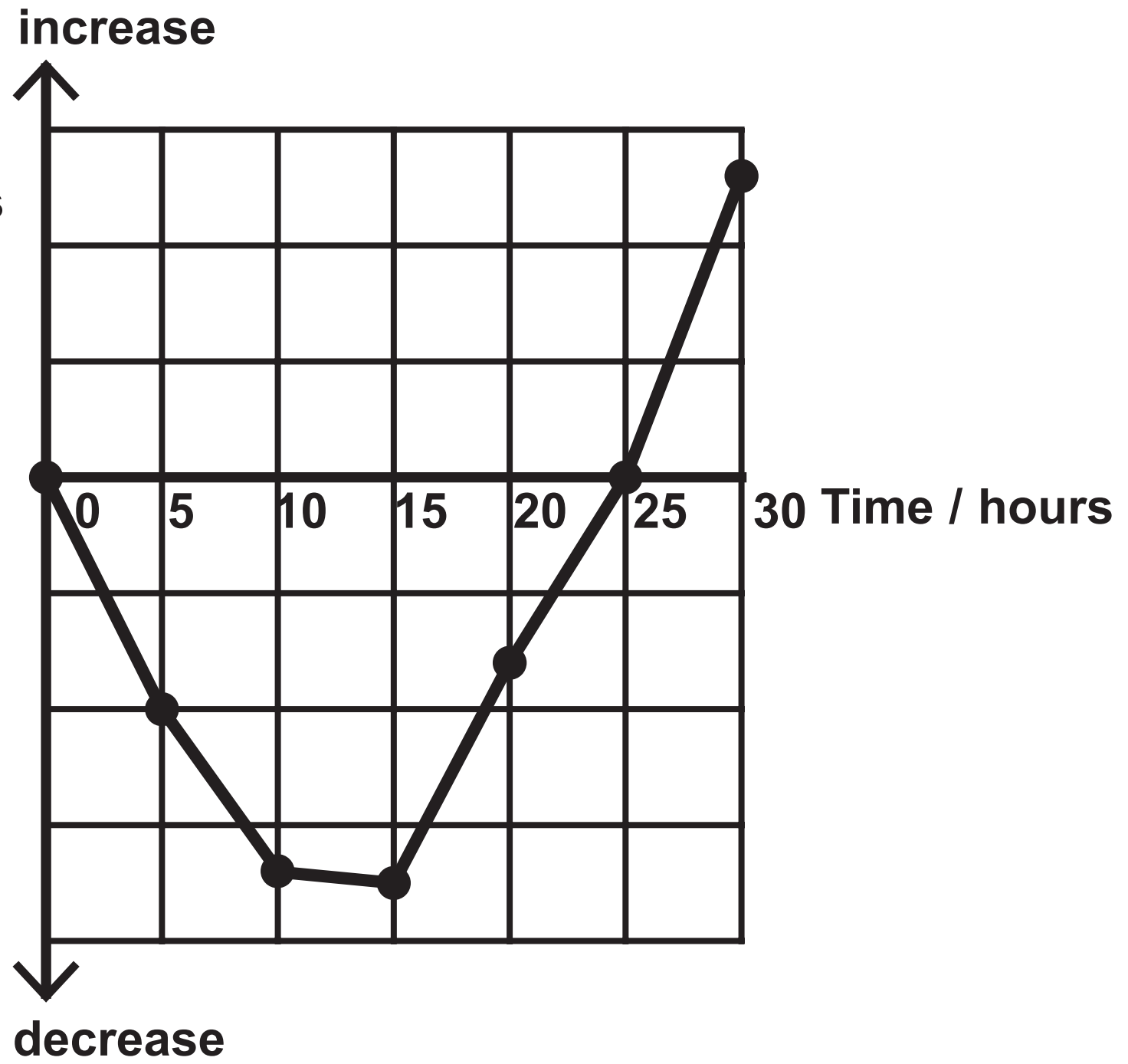
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### **Spare copies**

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## Question 1(b)

Change in  
concentration of  
potassium ions in  
the cells in the roots  
of the seedlings



Question 2(a)

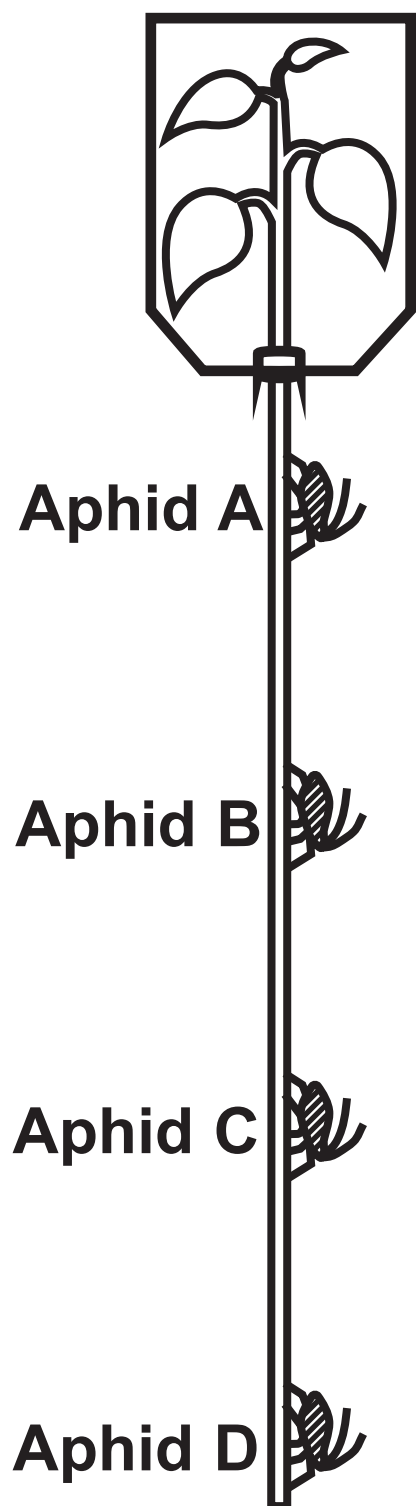
Characteristic	Organisms in the domain Archaea
membrane-enclosed nucleus	absent
peptidoglycan in cell wall	absent
ribosomes	70S

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"/>

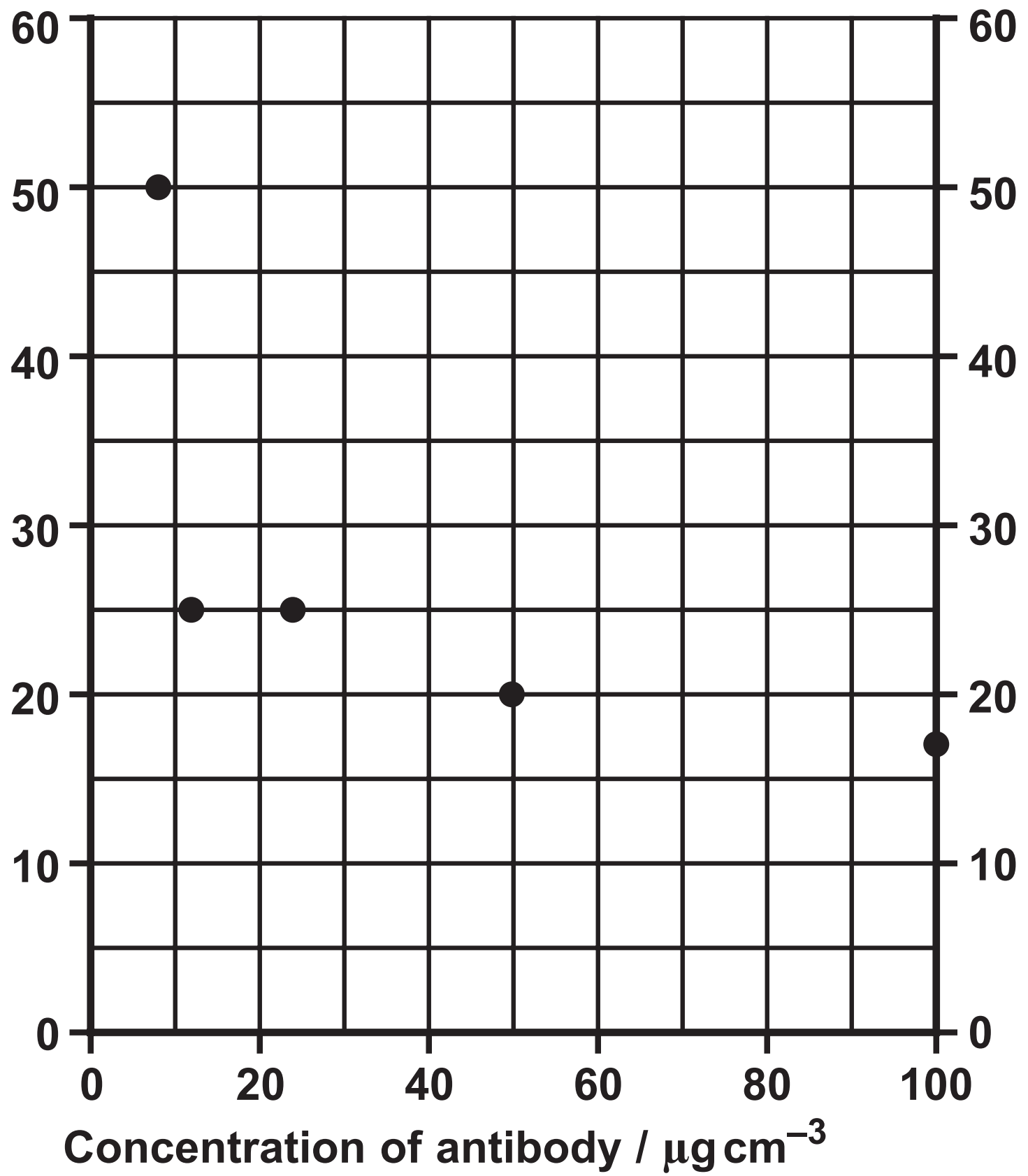
**Question 3(c)(i)**

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)

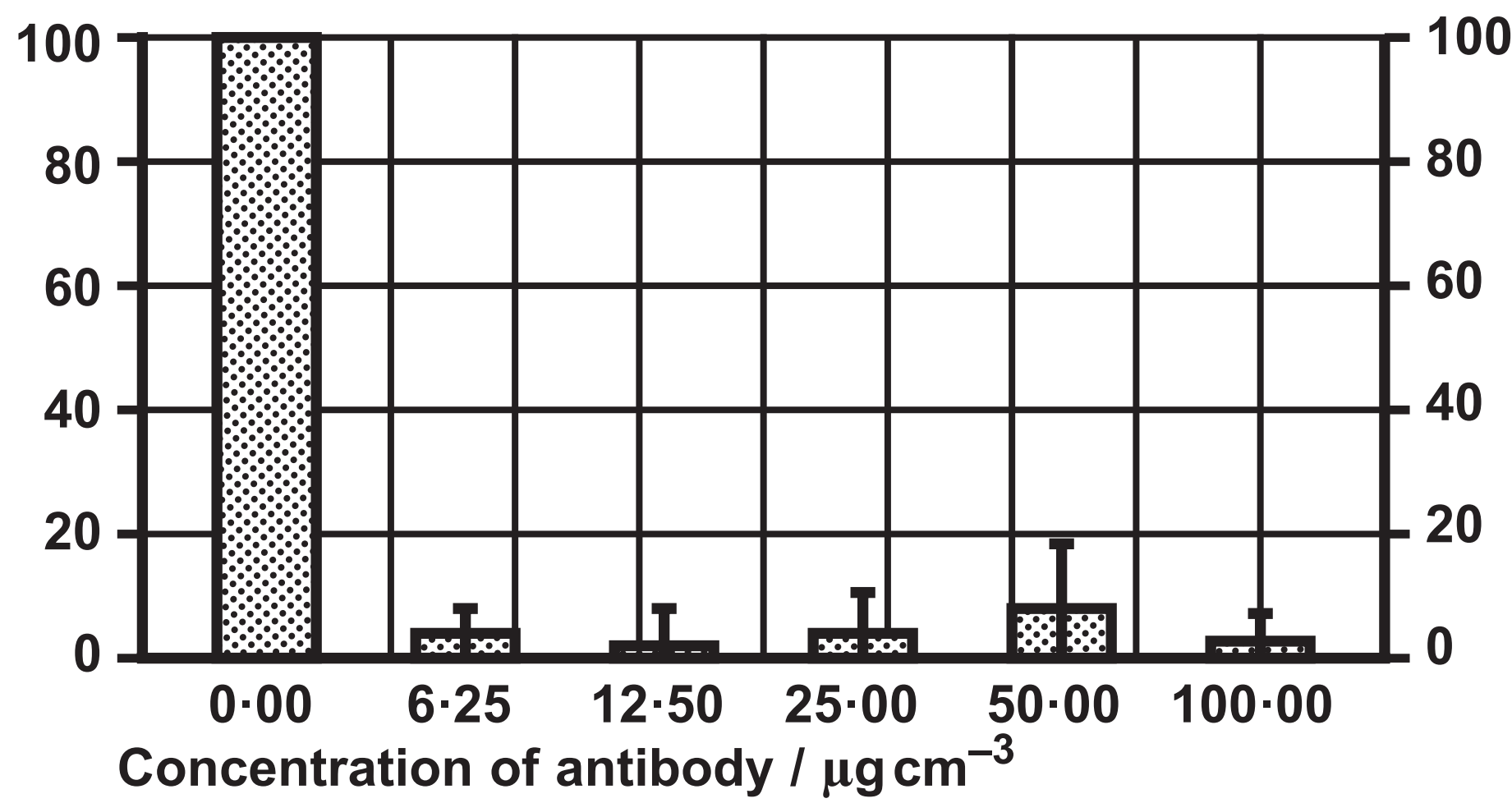
Time taken for 100% agglutination / secs

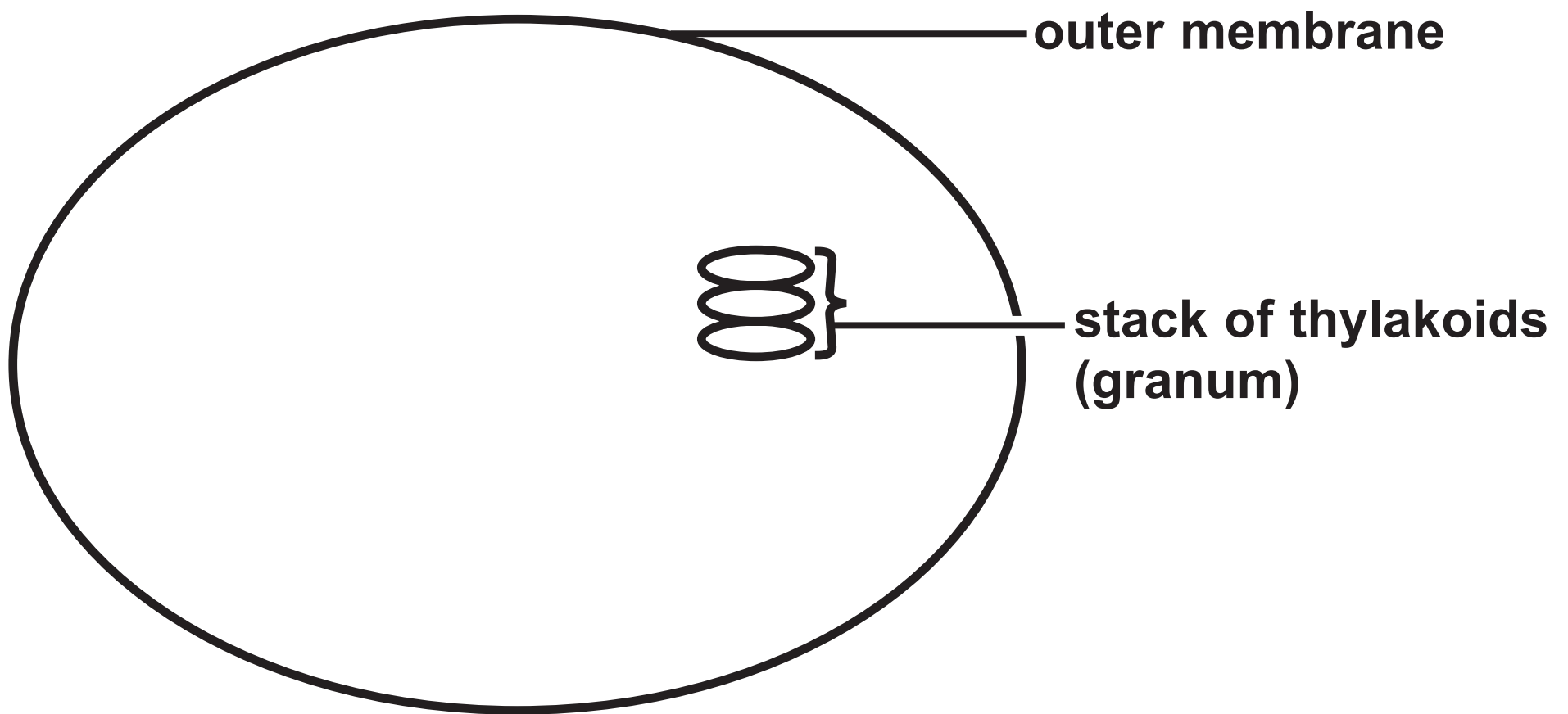


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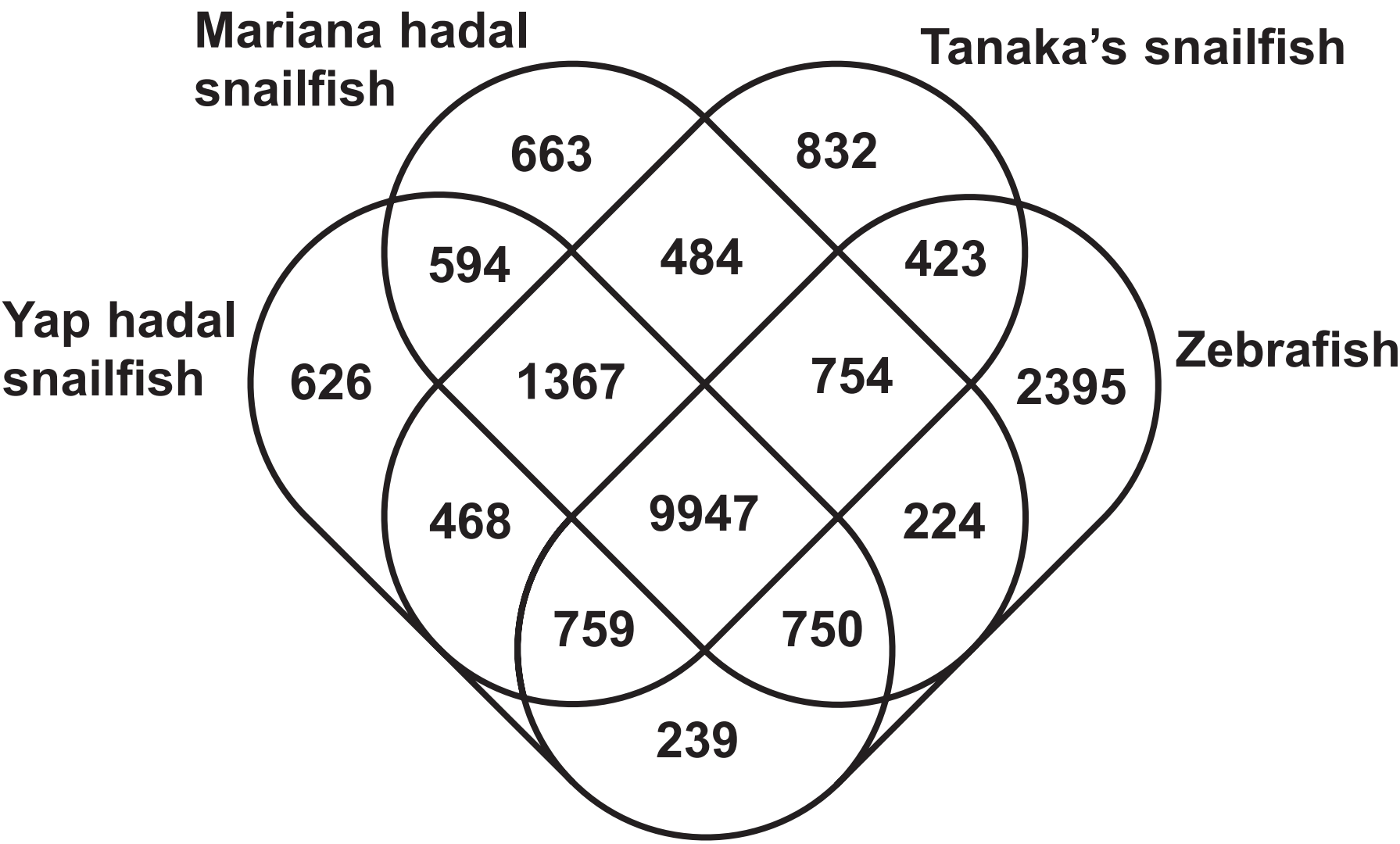
Question 5(b)(ii) continued.

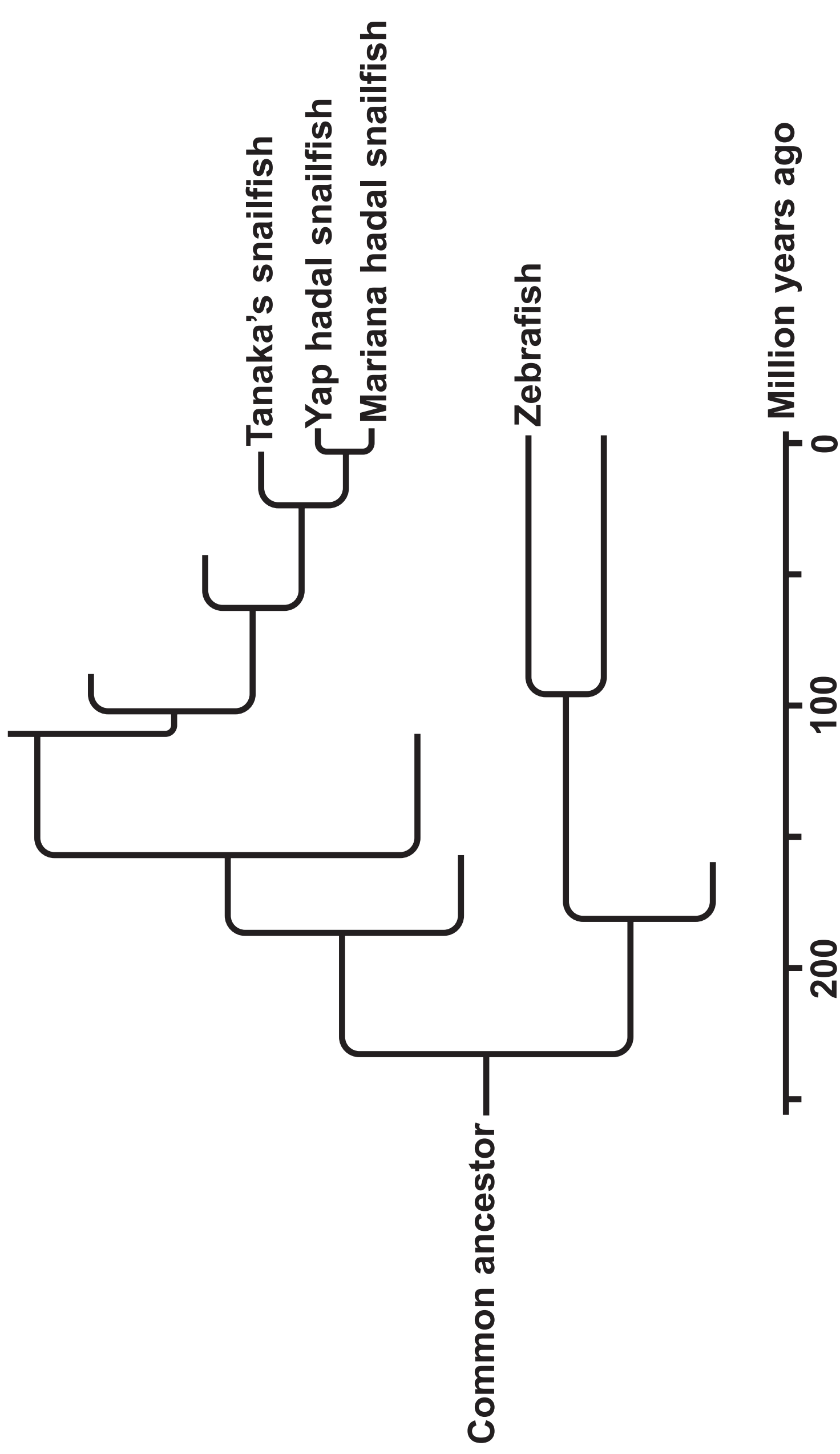
Percentage of sperm cells that escaped compared with the control with no antibody (%)

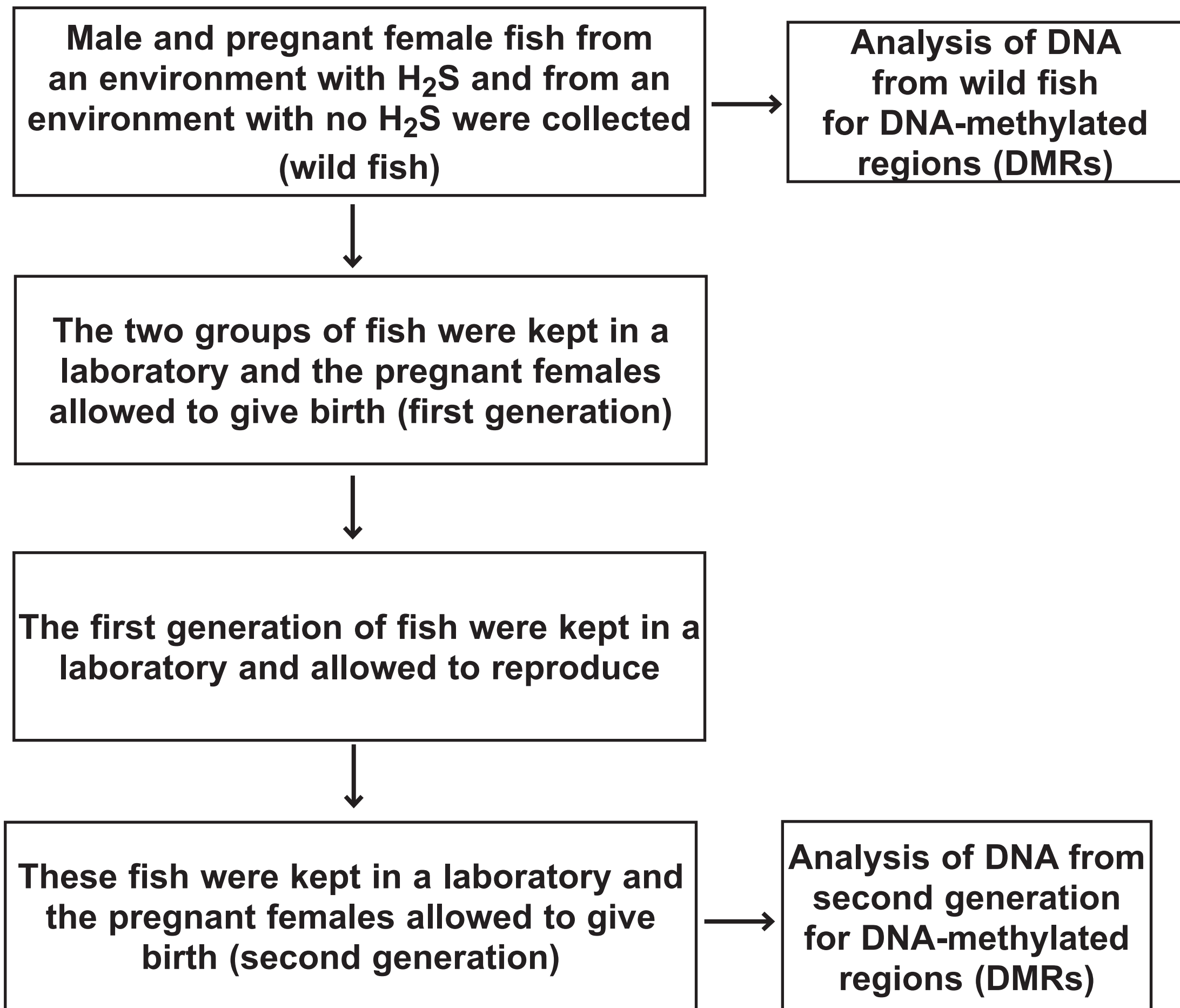


**Question 6(a)**

Question 7(b)(ii)



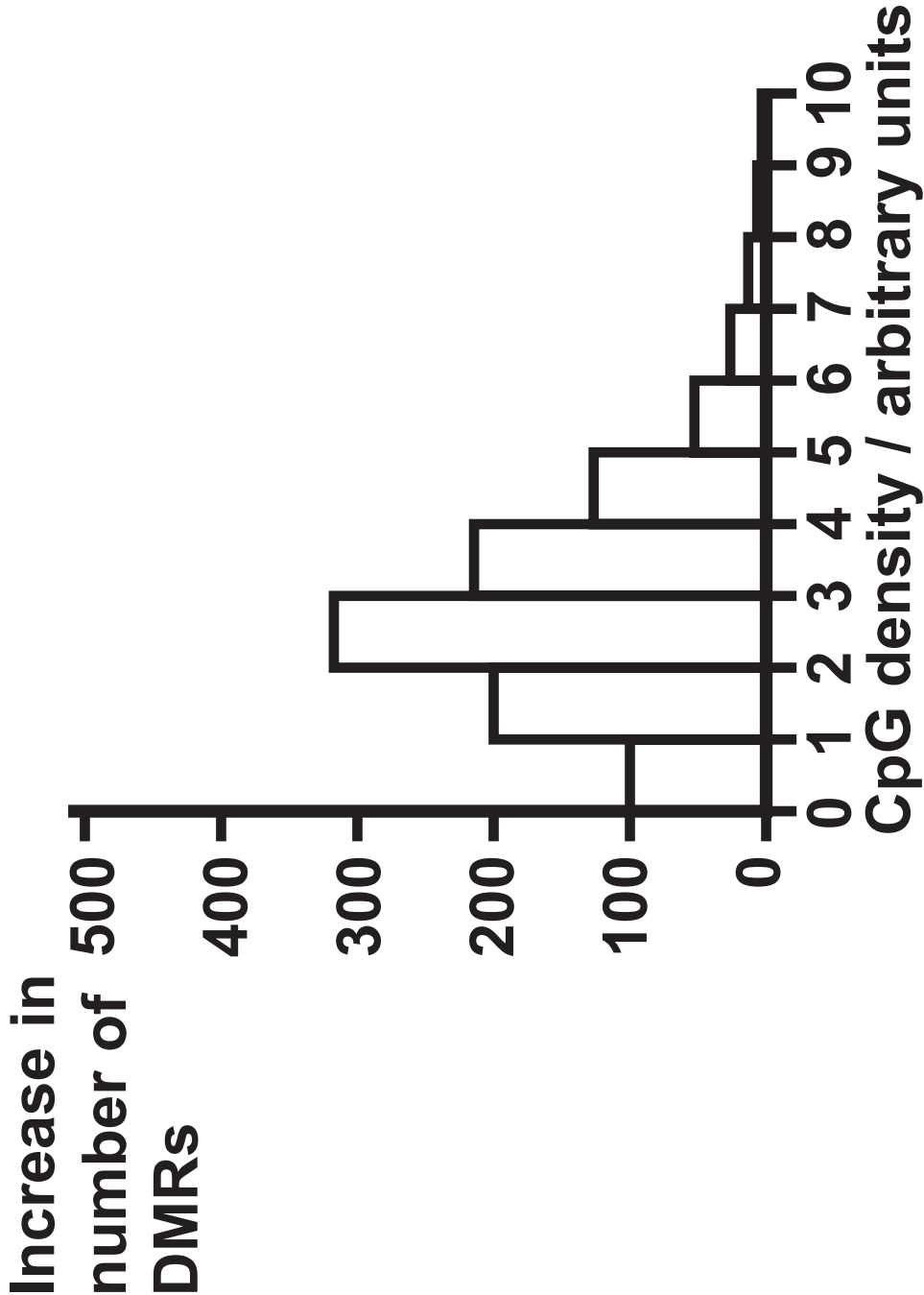


**Question 9(c)**

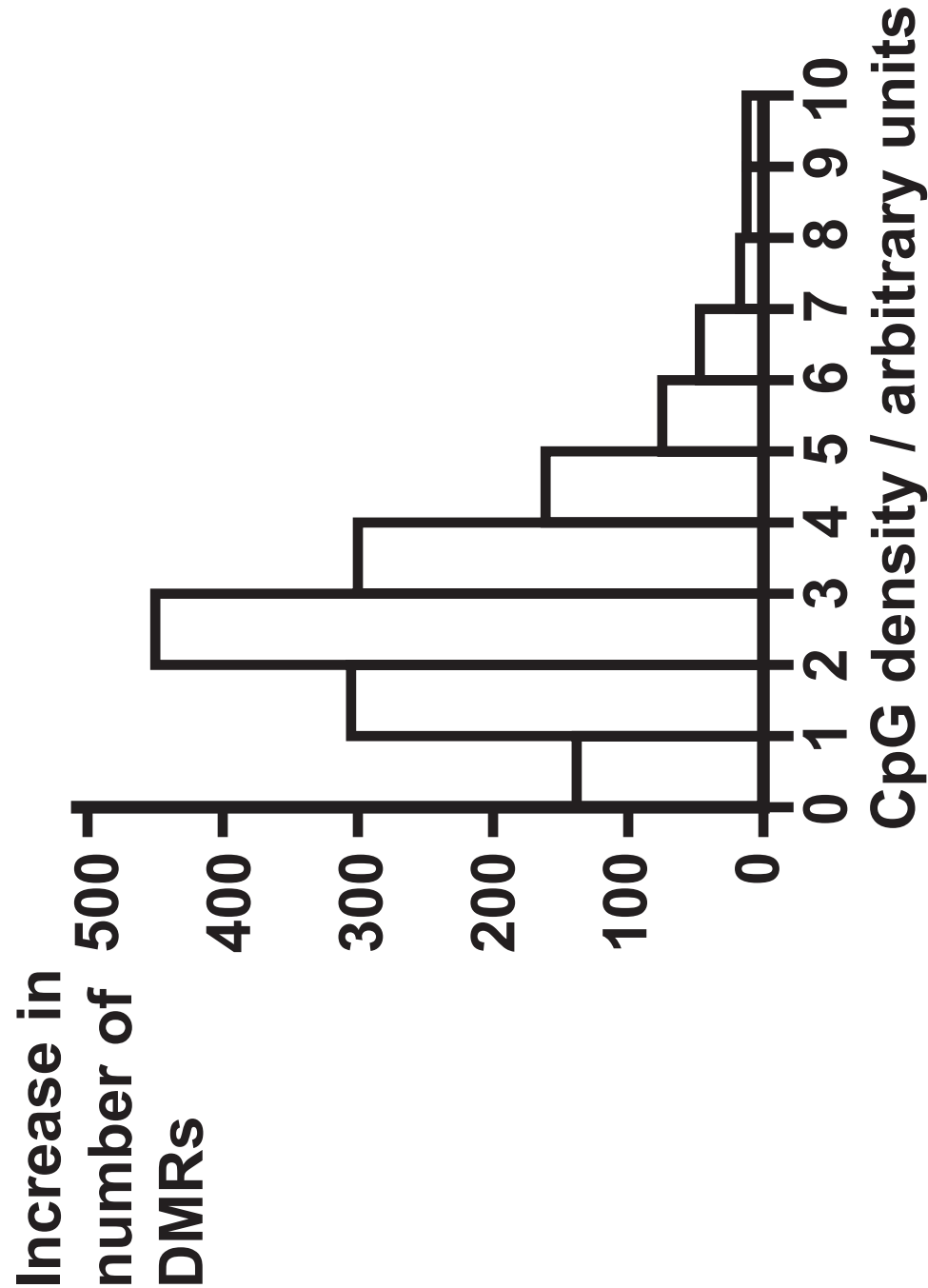
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Question 9(c) continued.

**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



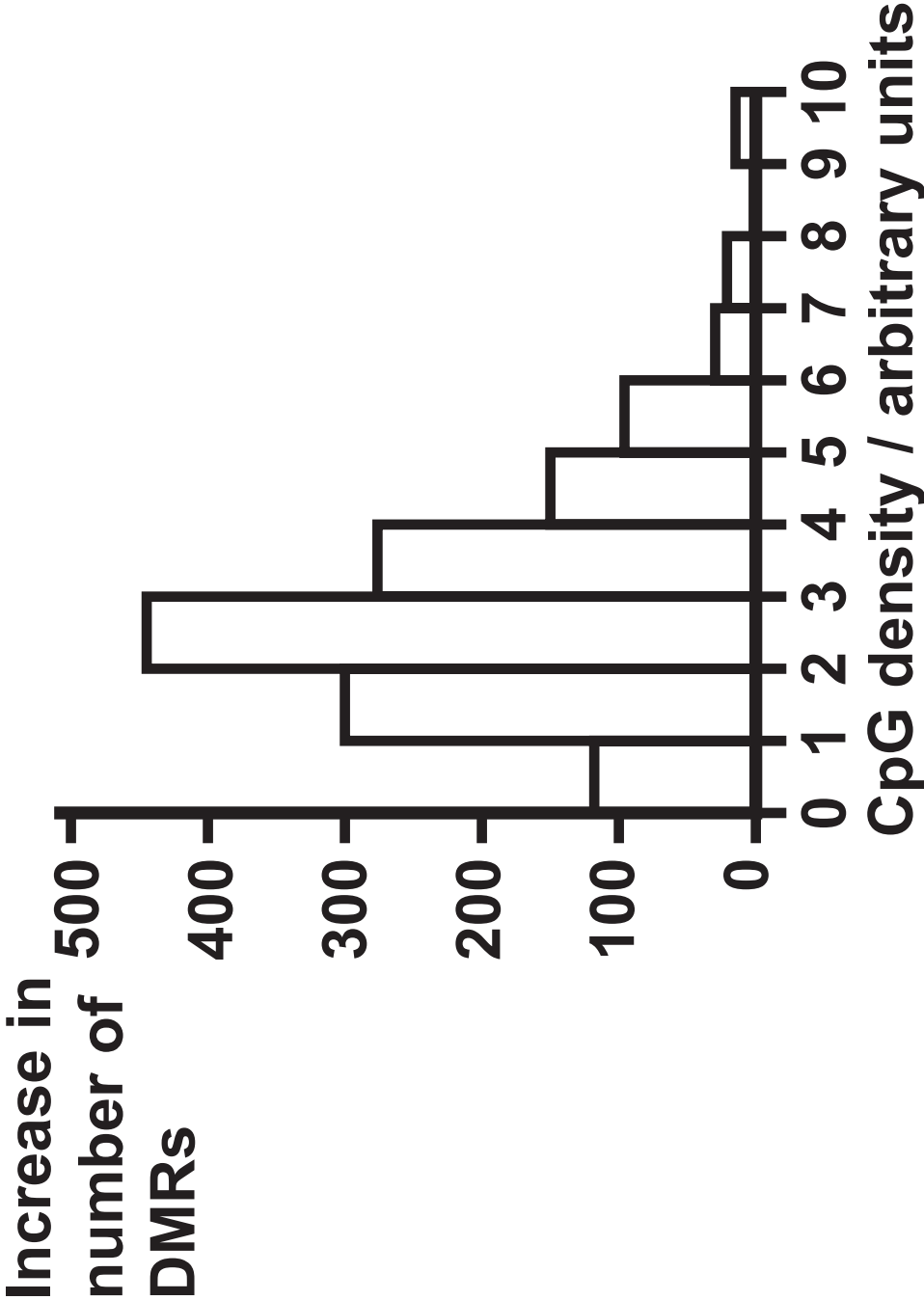
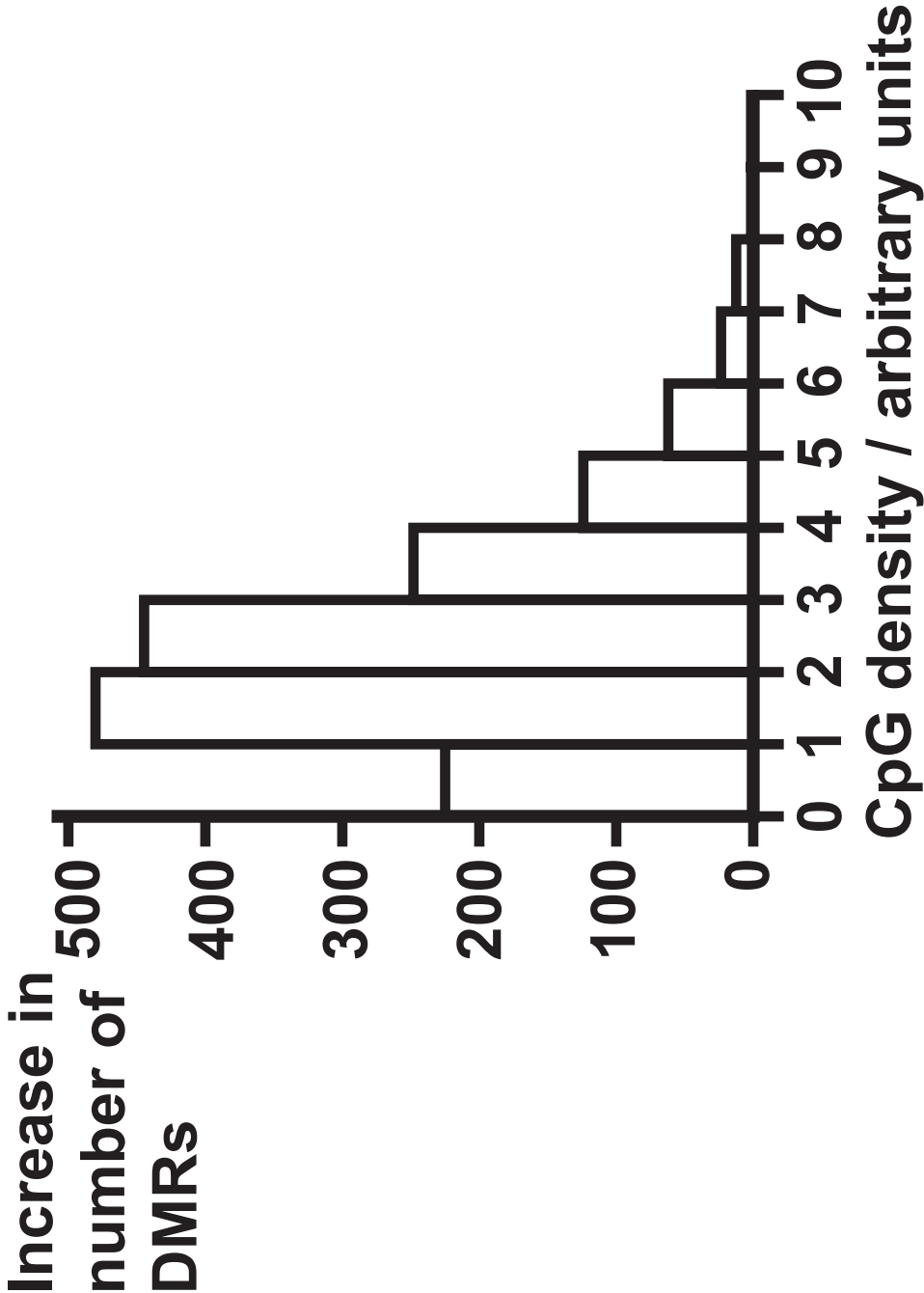
**Graph 2: Wild female fish**  
fish from environment with H<sub>2</sub>S compared  
with fish from environment with no H<sub>2</sub>S



(continued on the next page)

Turn over

**Graph 3: Second generation male fish**      **Graph 4: Second generation female fish**  
fish from environment with H<sub>2</sub>S compared      fish from environment with H<sub>2</sub>S compared  
with fish from environment with no H<sub>2</sub>S      with fish from environment with no H<sub>2</sub>S





Question 6(a)

