

Paper Reference(s) 9BI0/02  
Pearson Edexcel Level 3 GCE

Biology B  
Advanced  
PAPER 2: Advanced Physiology, Evolution and Ecology

Friday 16 June 2023 – Morning

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.

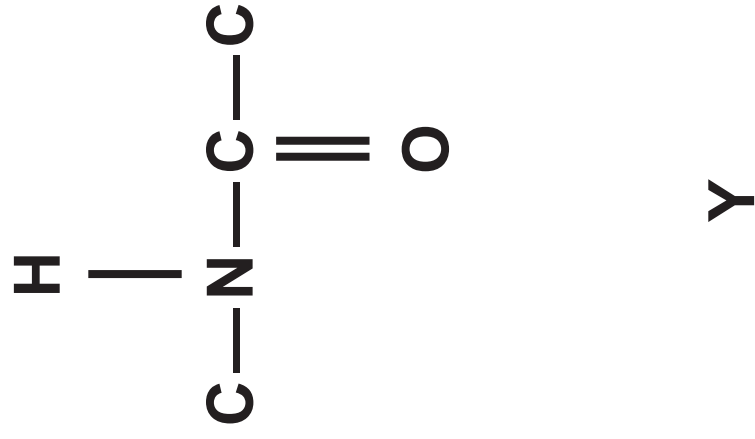
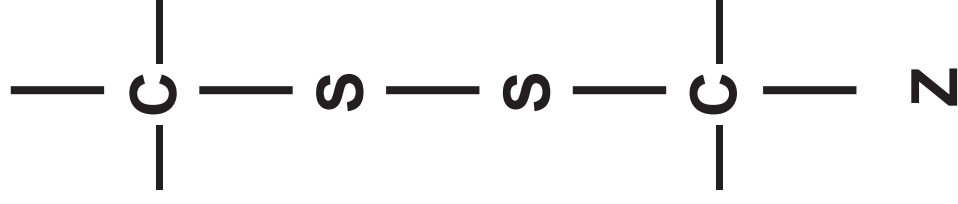
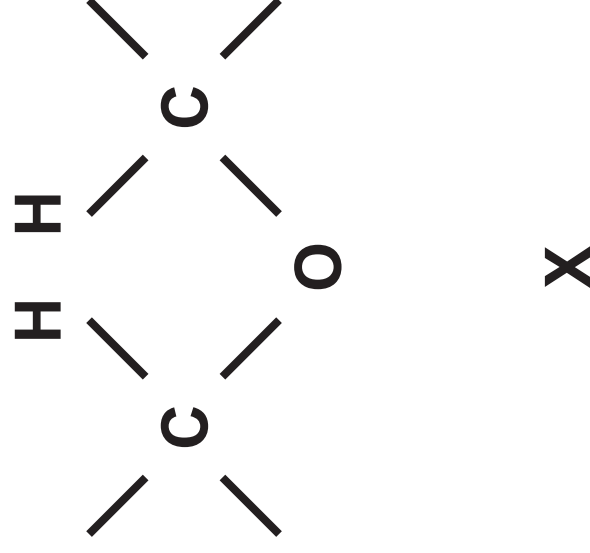
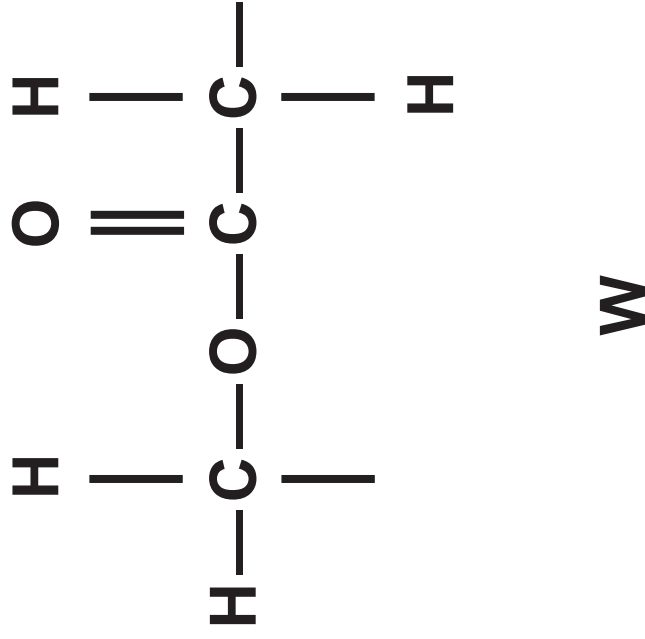
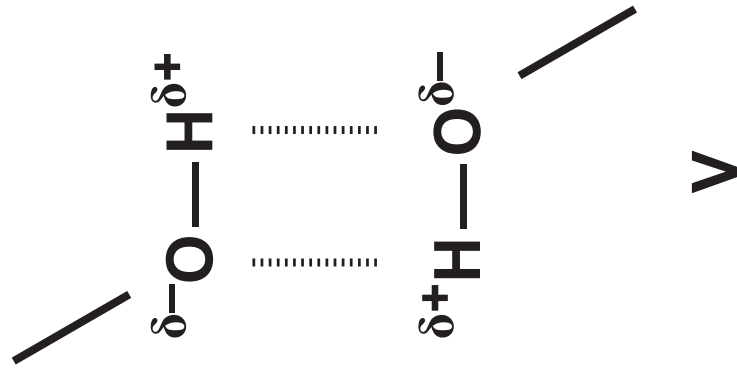
**THIS DIAGRAM BOOKLET MUST BE RETURNED WITH THE QUESTION PAPER AT THE END OF THE EXAMINATION.**

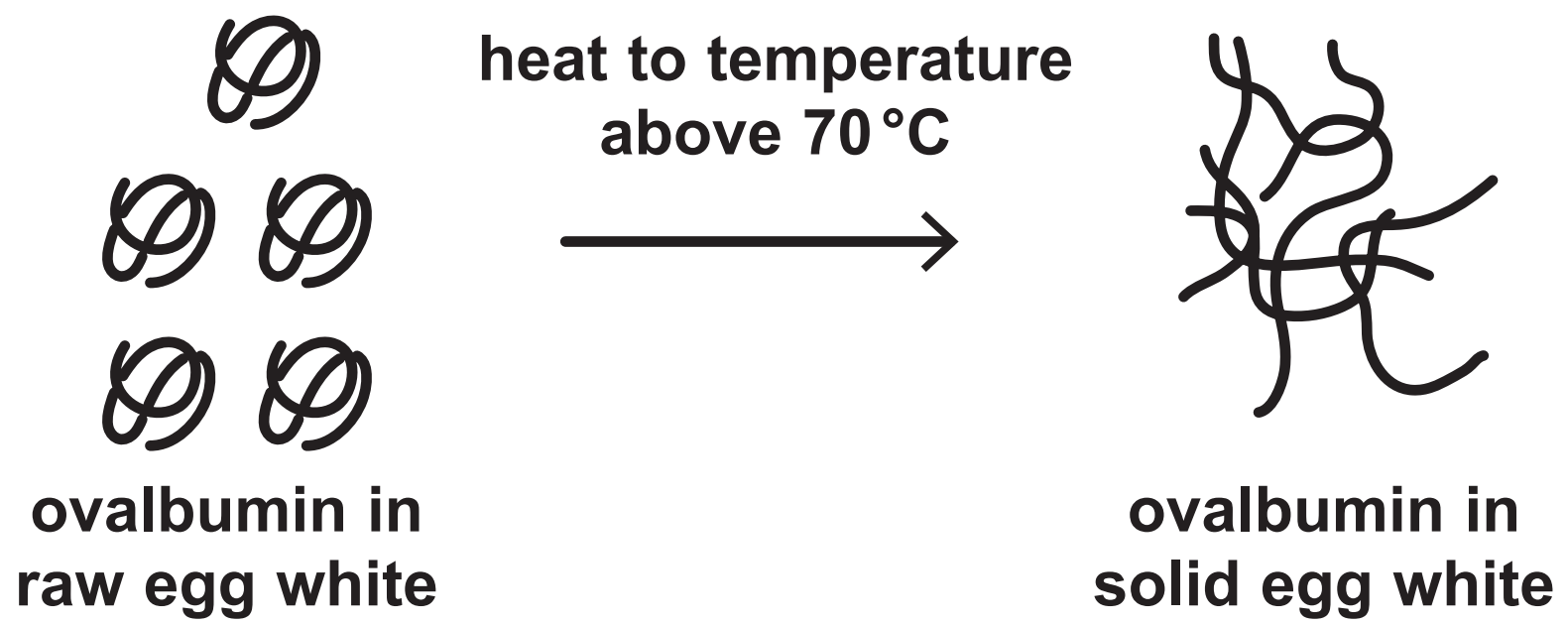
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# Question 1(a)



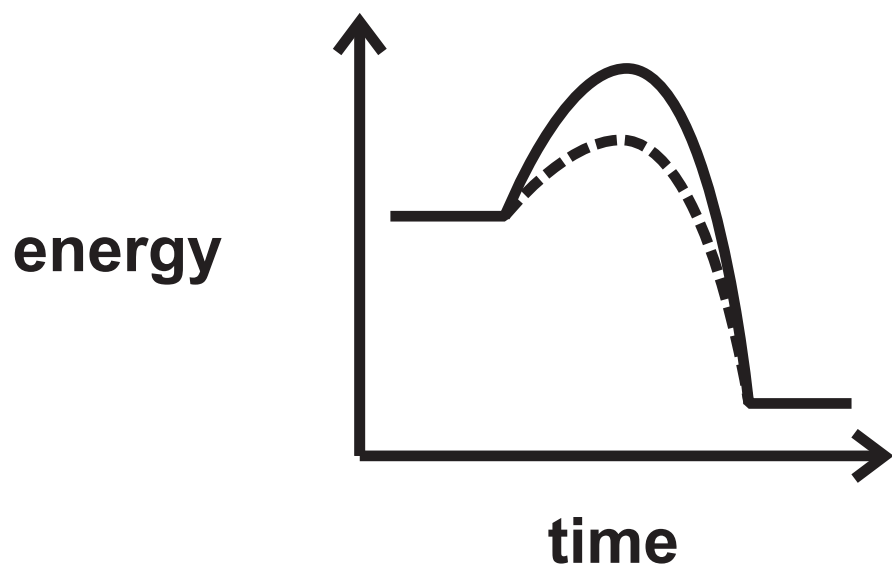
**Question 1(b)**

## Question 2(a)

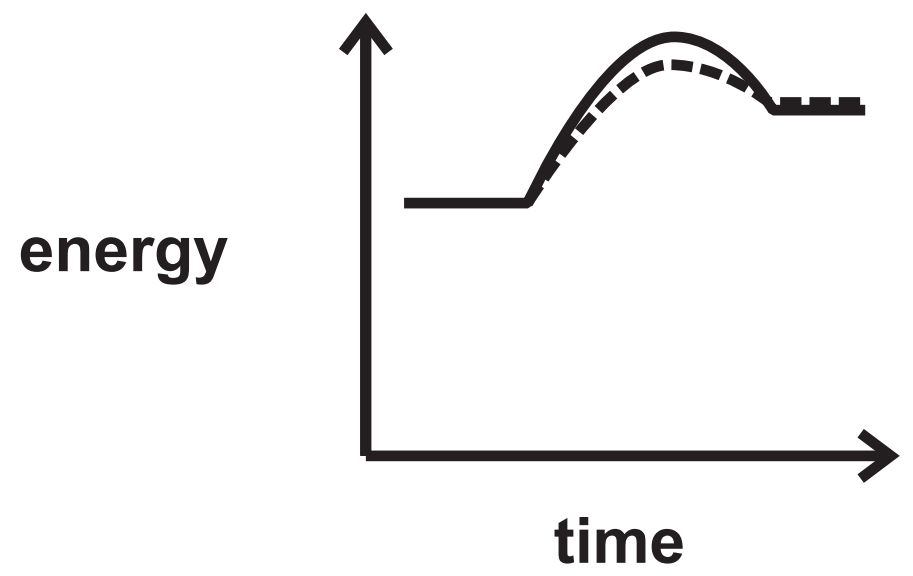
**Key:**

— without enzyme

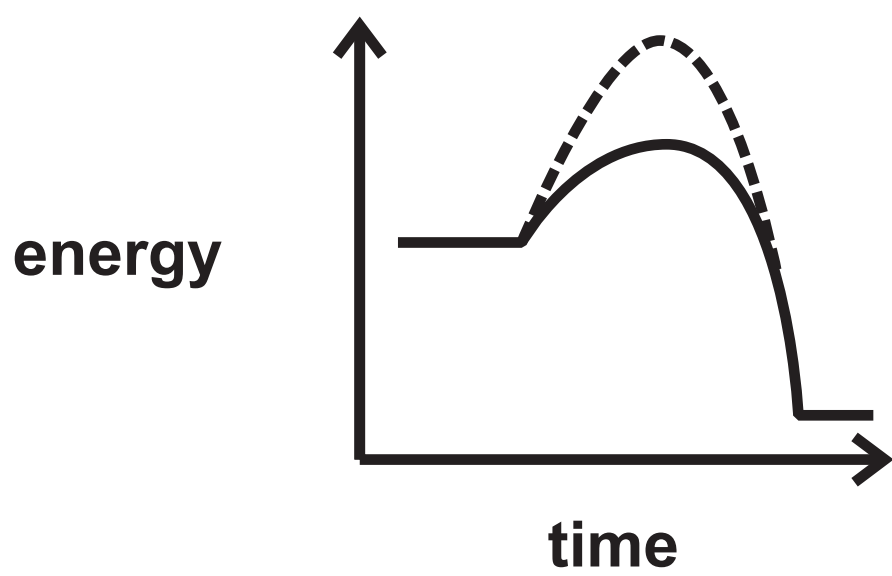
----- with enzyme



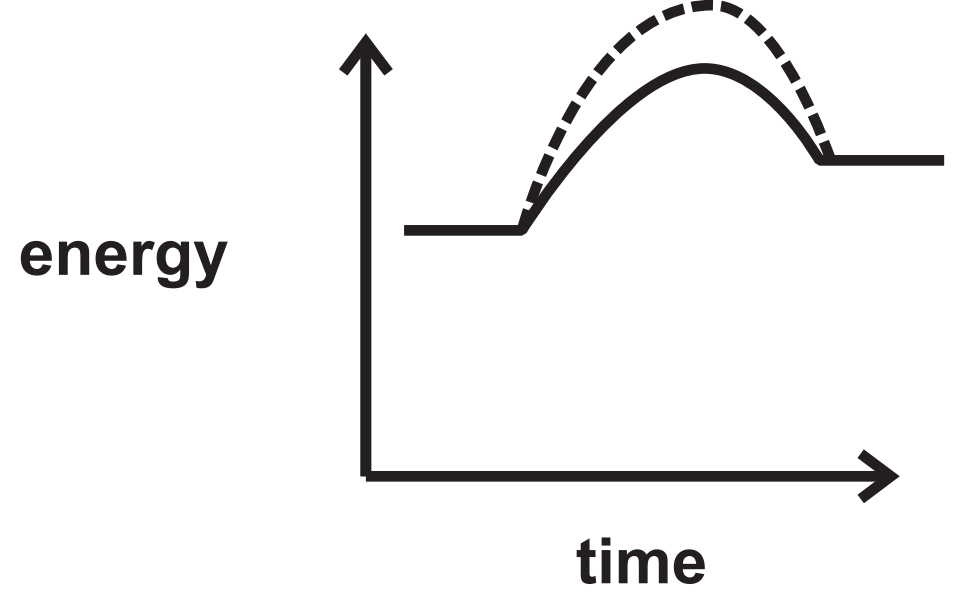
W



X



Y

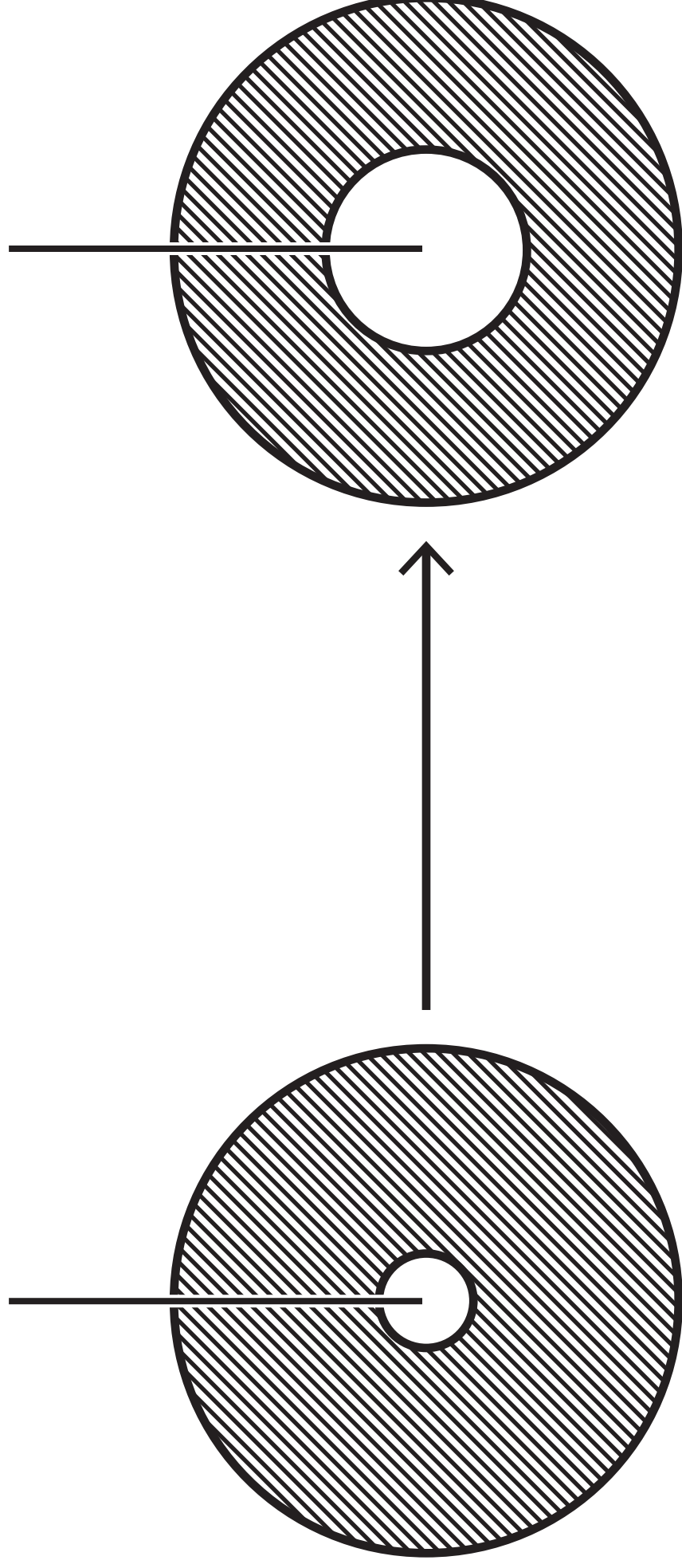


Z

Question 2(b)

area of gelatine that has been  
digested

well



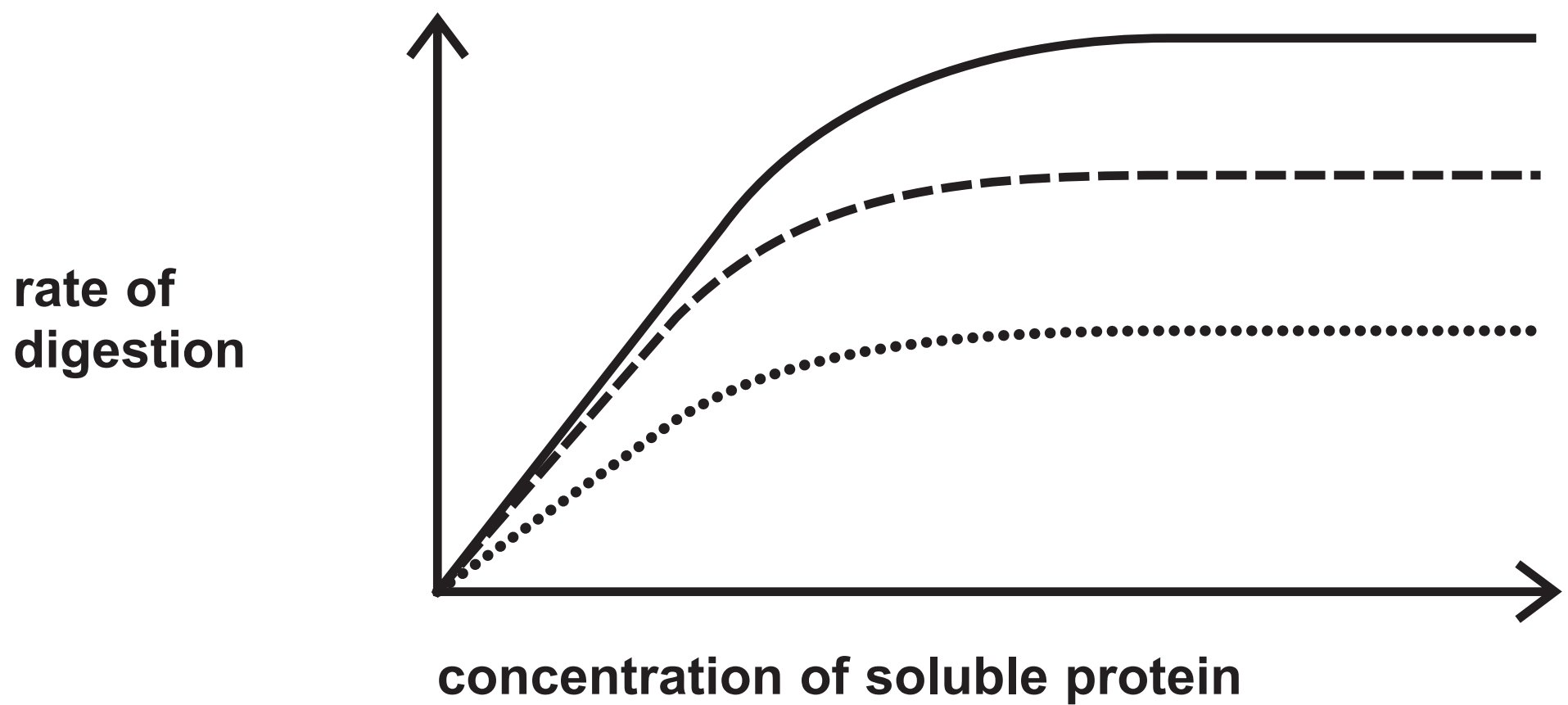
## Question 2(c)

### Key

———— no copper sulfate

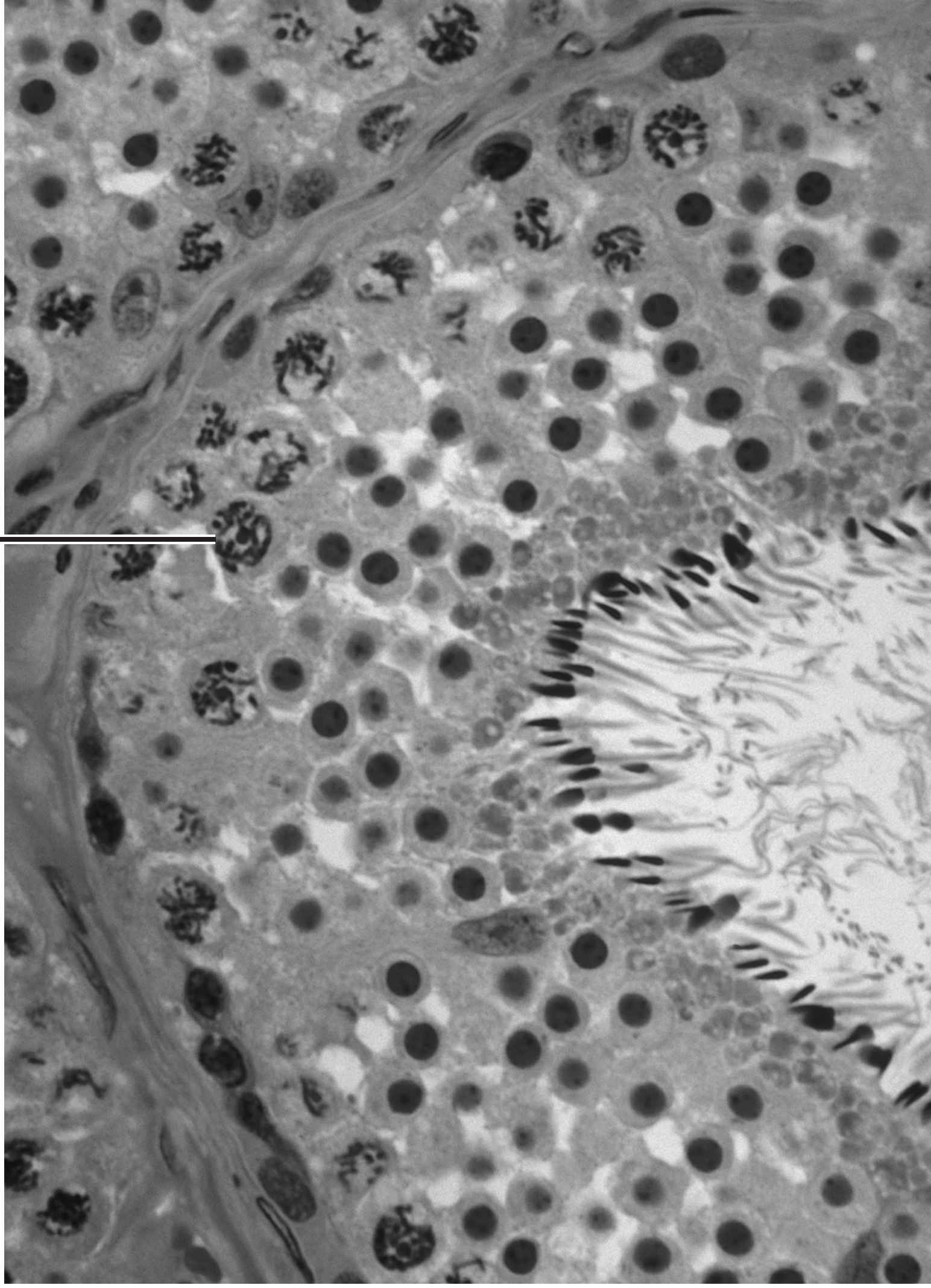
----- medium concentration of  
copper sulfate

..... high concentration of  
copper sulfate

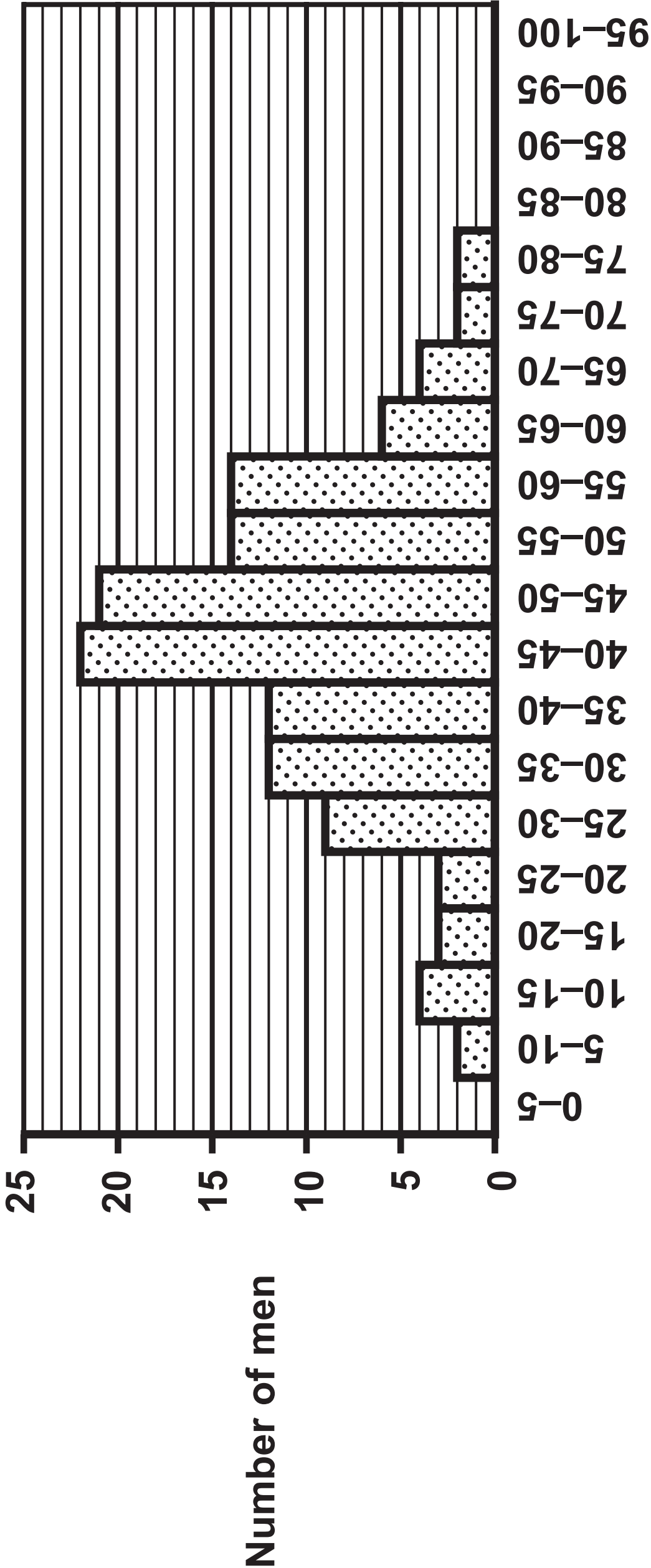




X



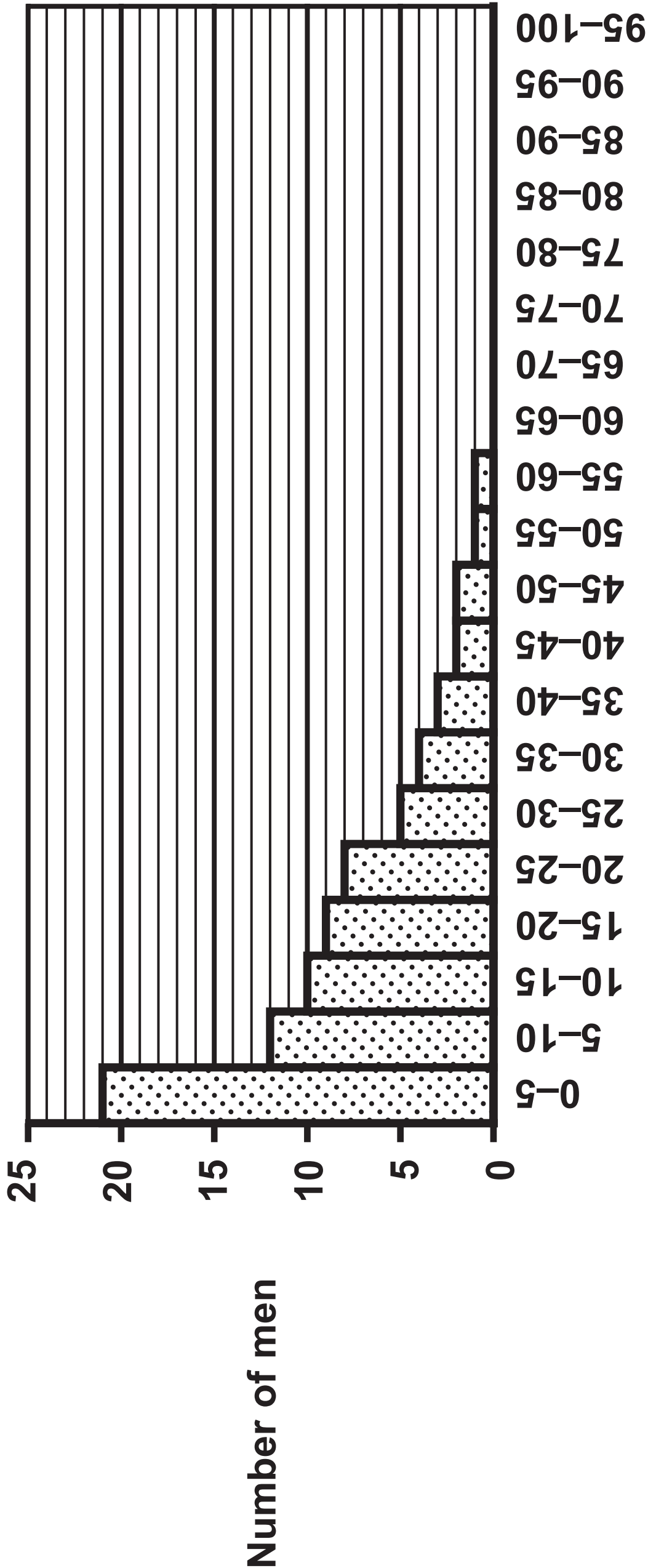
Men with partners with history of pregnancies not developing to full term



Percentage (%) of sperm cells with DNA damage

(continued on the next page)

Men with partners where pregnancies developed to full term



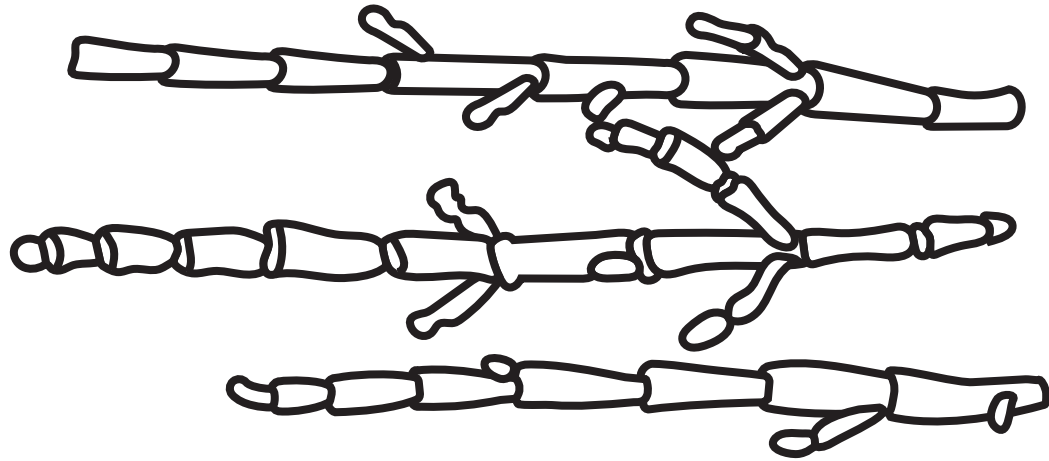
Percentage (%) of sperm cells with DNA damage







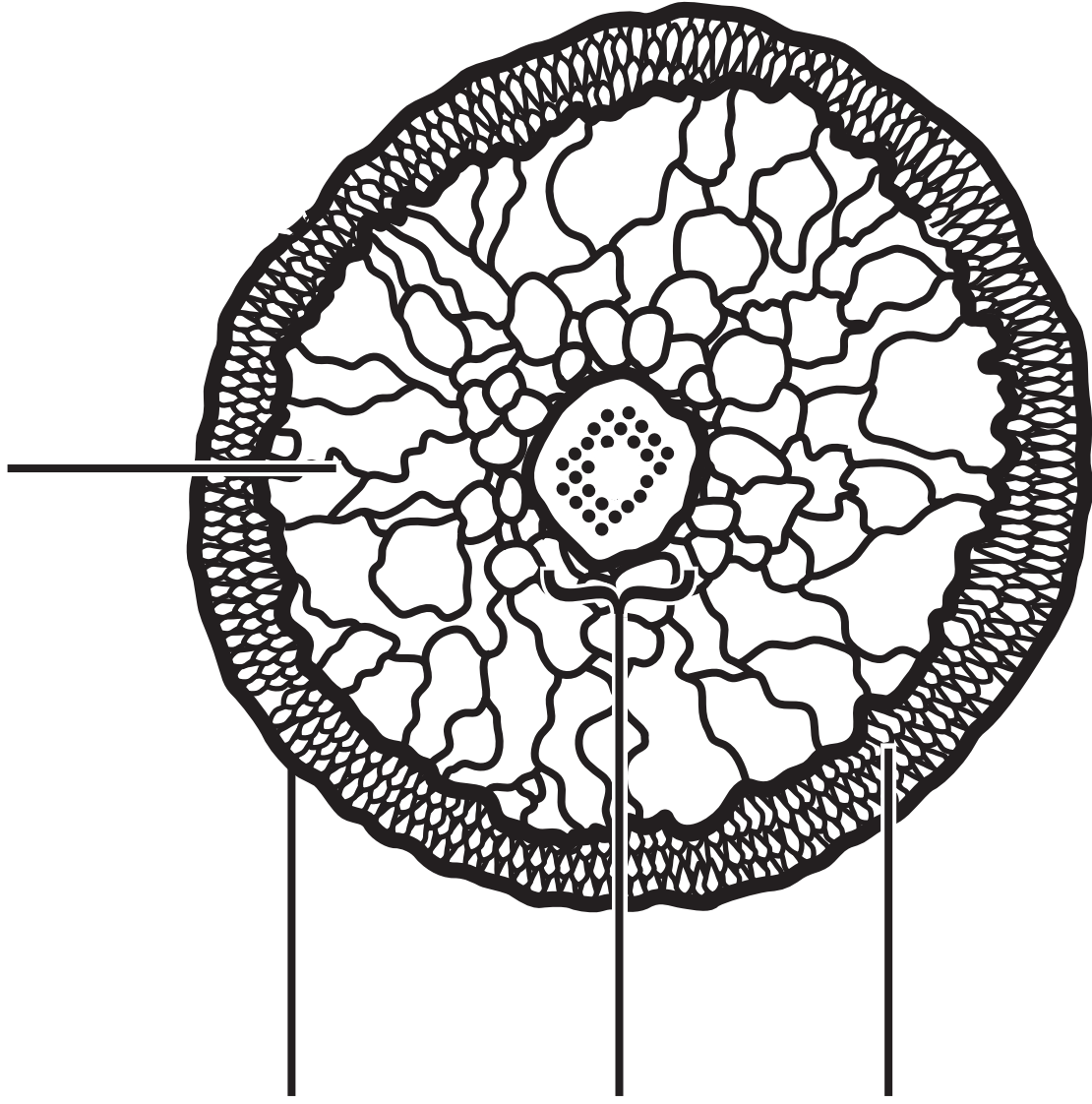
cortex containing large cells with high salt concentration and air spaces



thick epidermis and waxy cuticle

vascular tissue

palisade cells containing chloroplasts

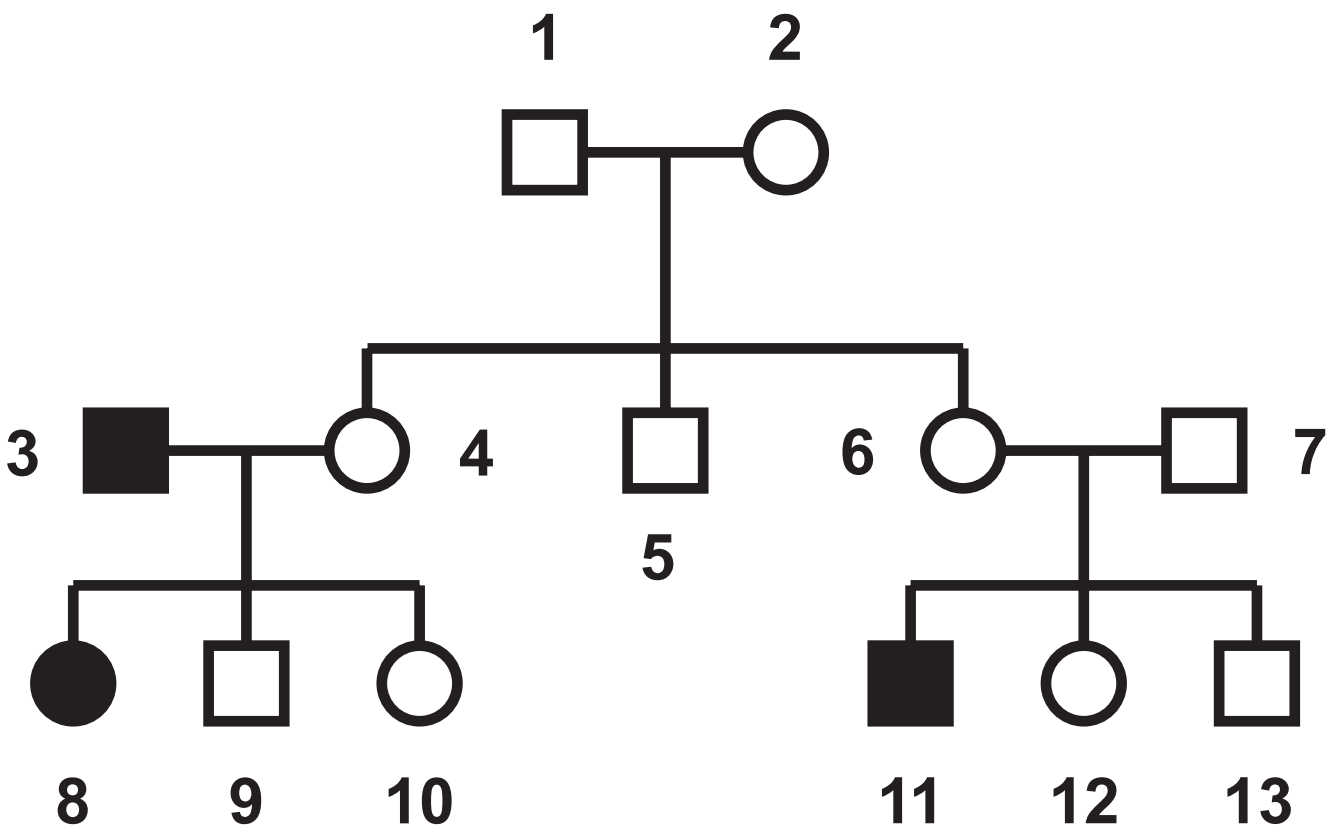


Factor		Distance from sea / m				
		0	5	10	15	20
ACFOR scales	Samphire	Abundant	Common	Rare	Absent	Absent
	Sea lavender	Absent	Rare	Common	Common	Rare
	Scurvy grass	Absent	Absent	Rare	Occasional	Abundant
Index of diversity for all plant species		0-20	0-54	0-85	2-54	2-85
Percentage of silt made up of organic material (%)		15	10	25	35	55

Question 5(b)

Key

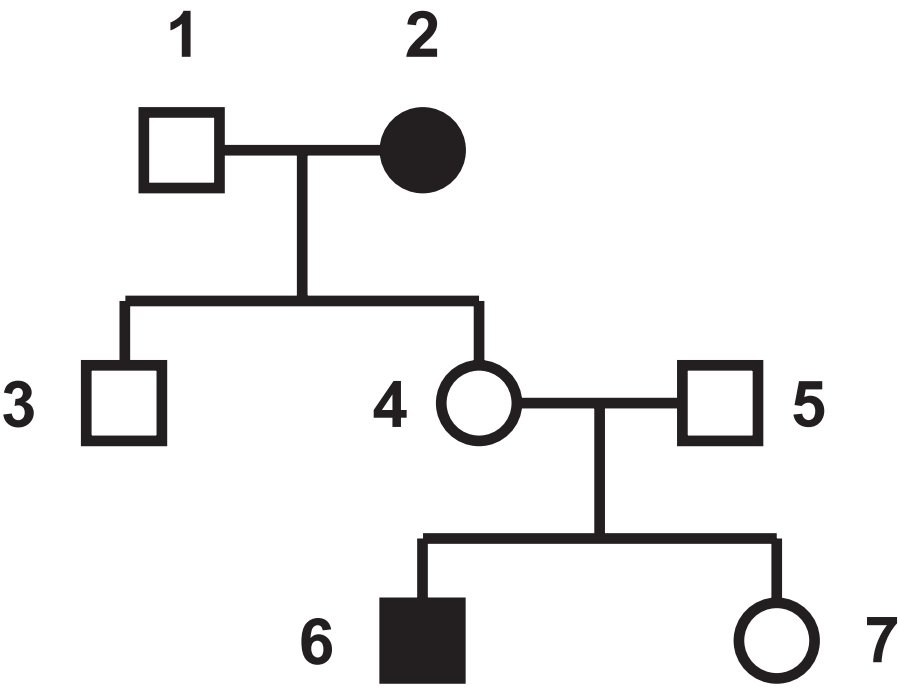
- ☐ male without colour blindness
- ☒ male with colour blindness
- ☐ female without colour blindness
- ☒ female with colour blindness



Question 5(c)(i)

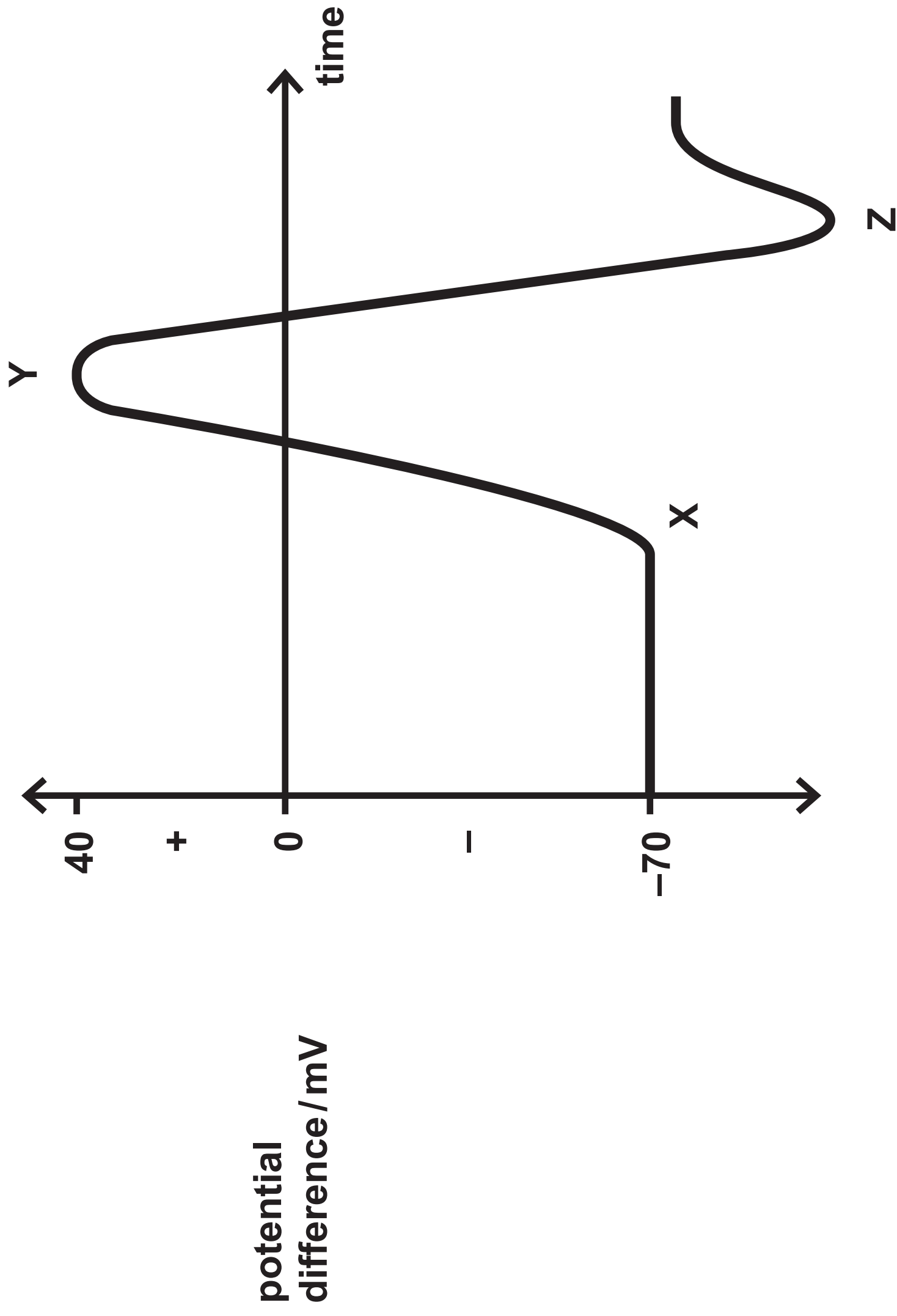
Key

- ☐ male without achromatopsia
- ☒ male with achromatopsia
- ☐ female without achromatopsia
- ☒ female with achromatopsia

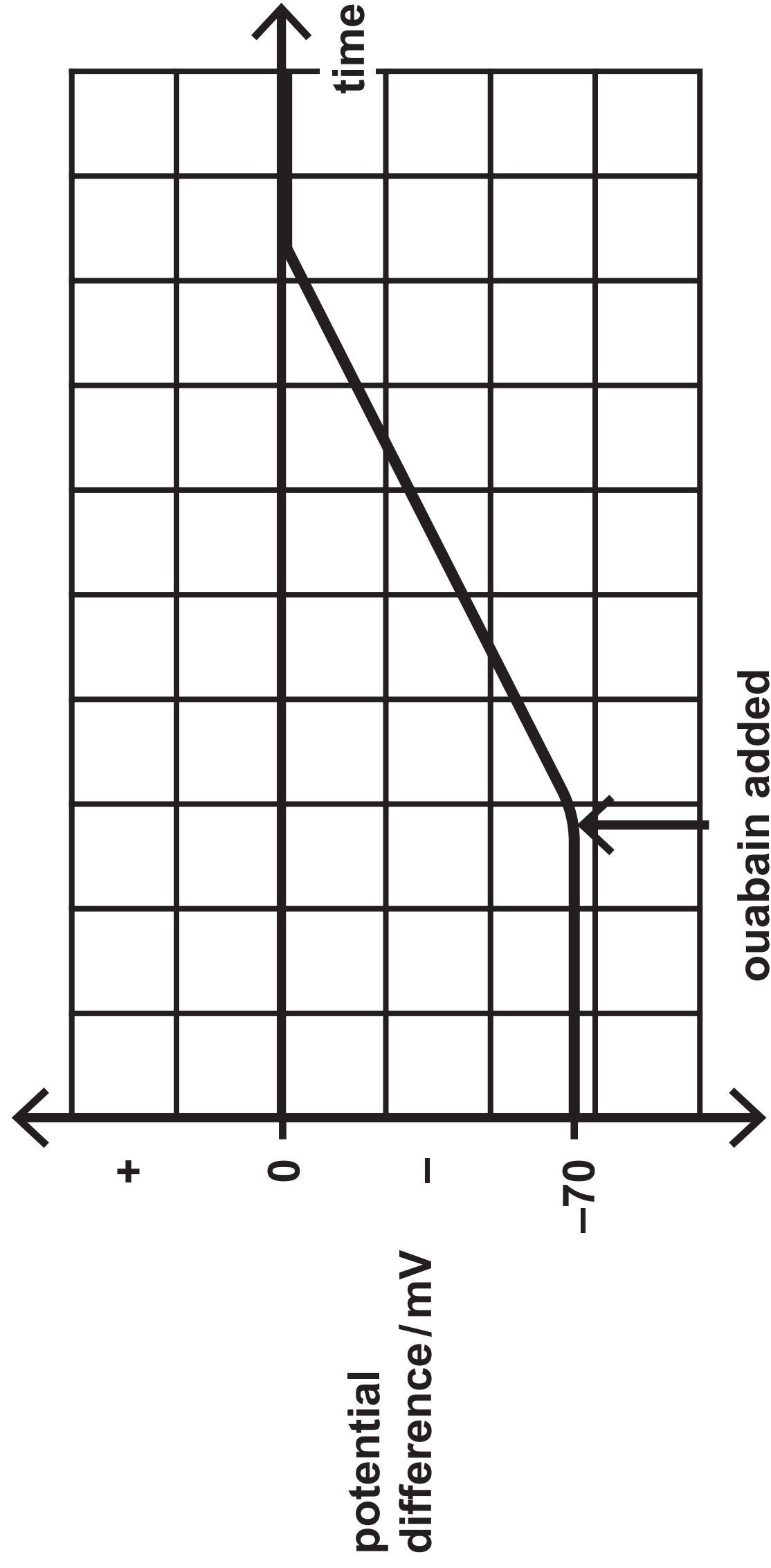




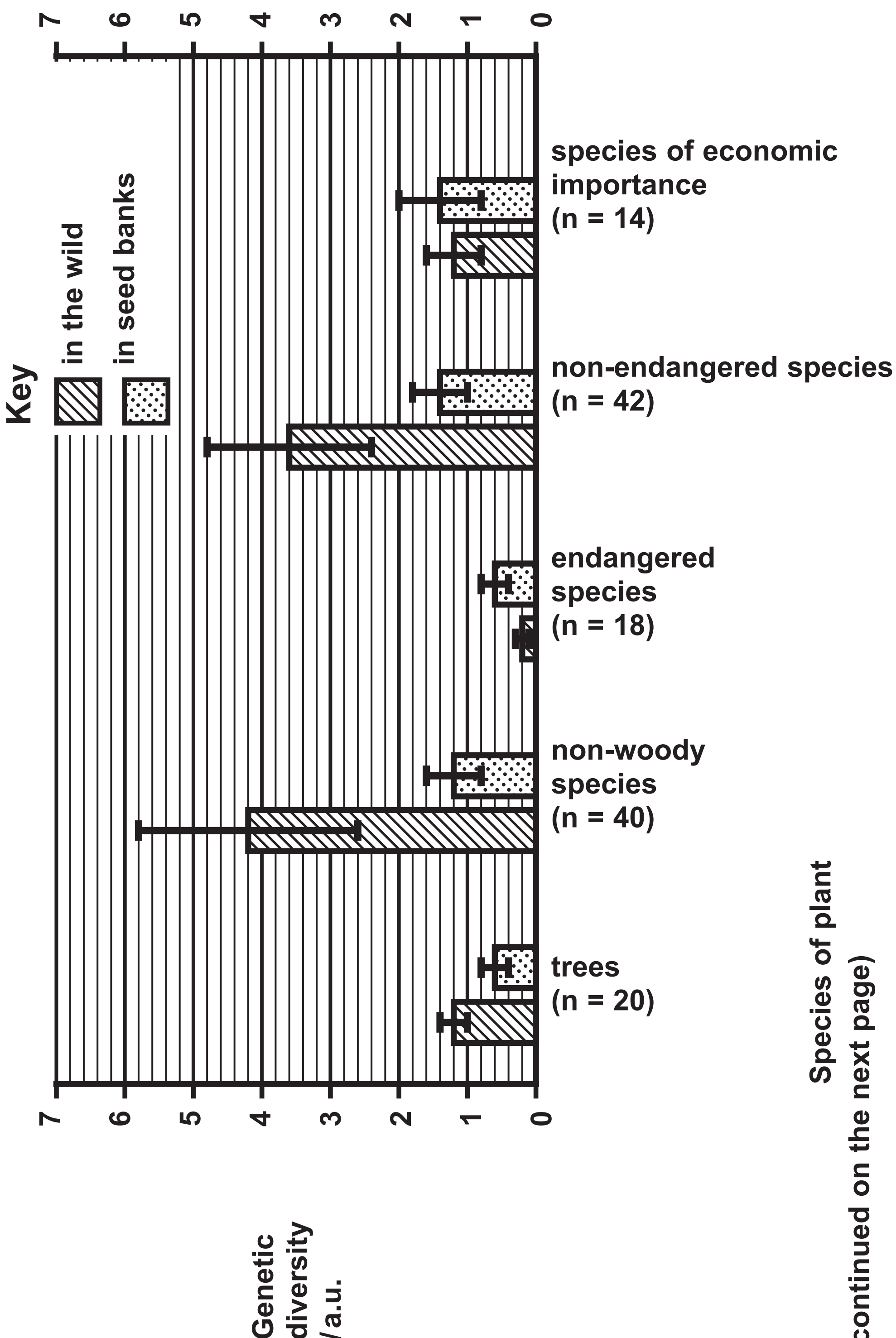
Question 6(a)

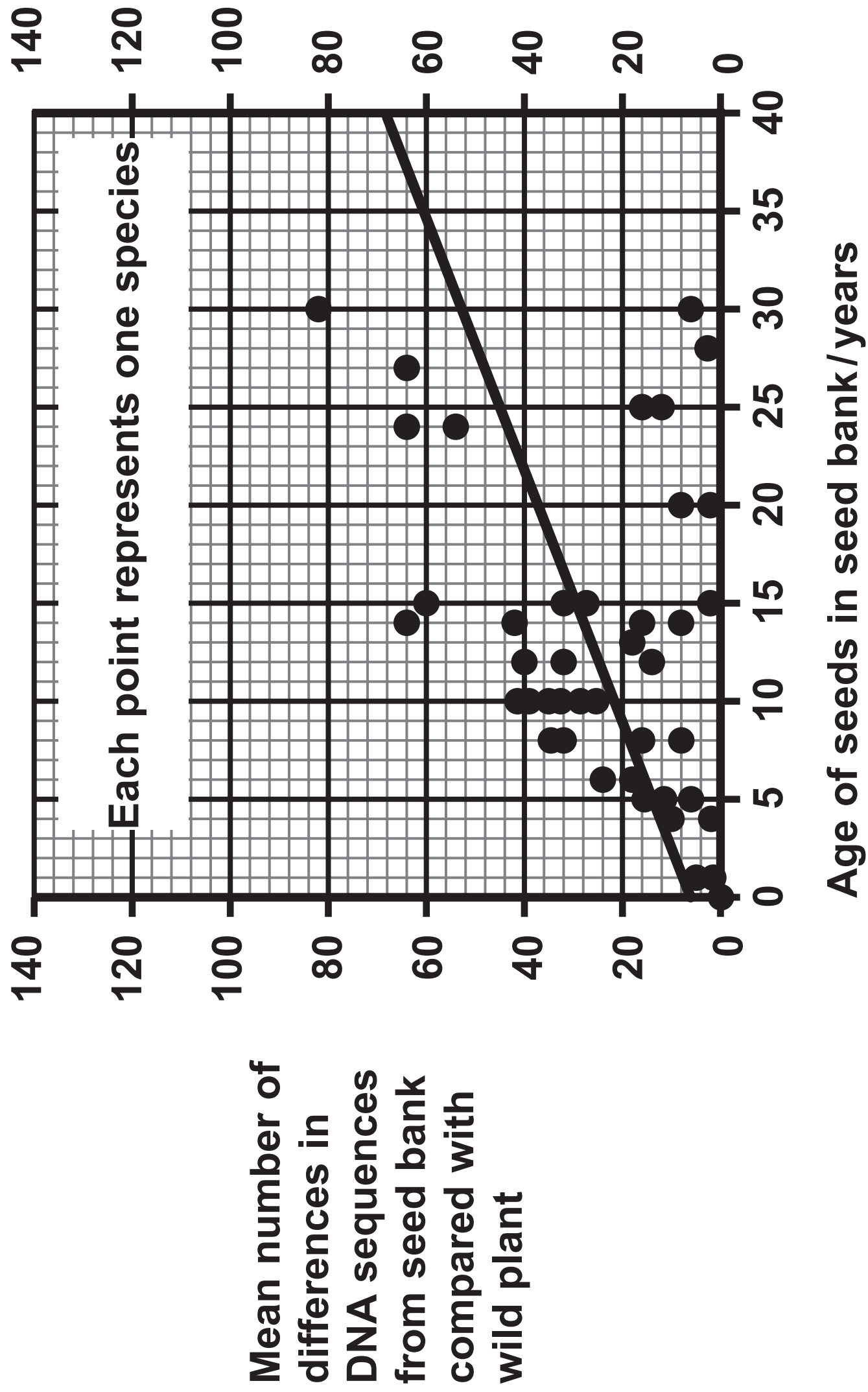


**Question 6(b)**

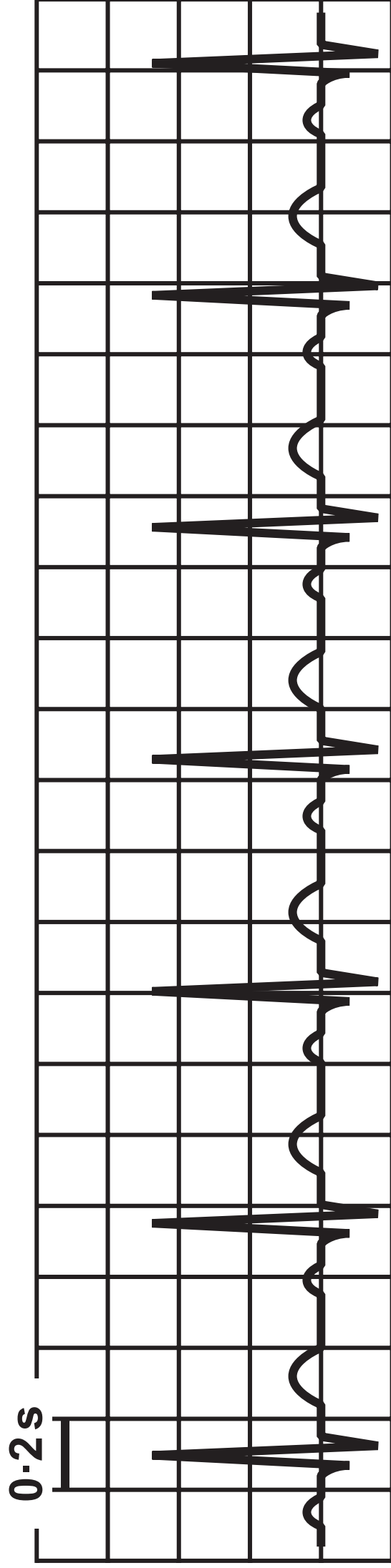


Question 7(b)

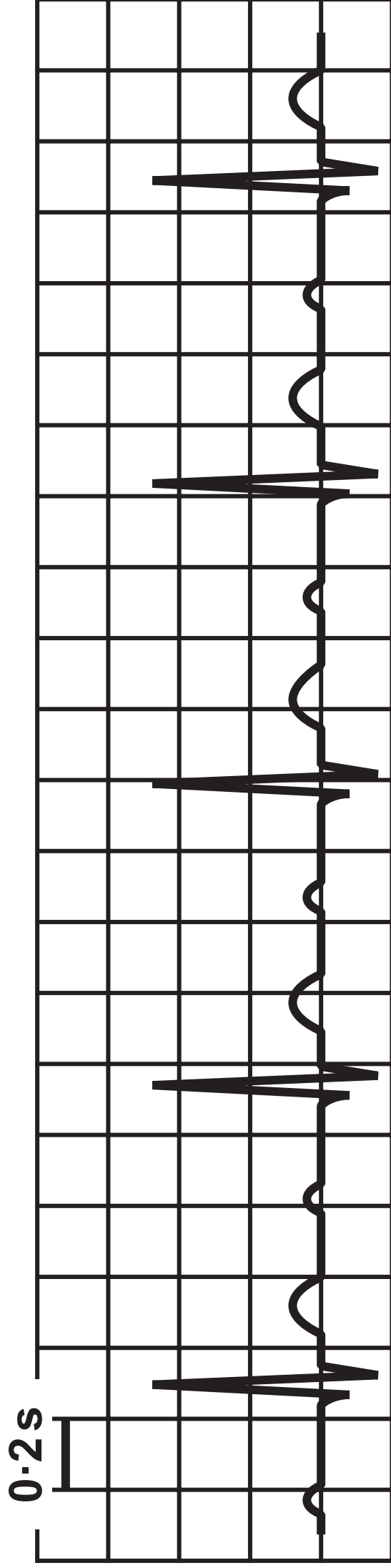




Question 8(b)



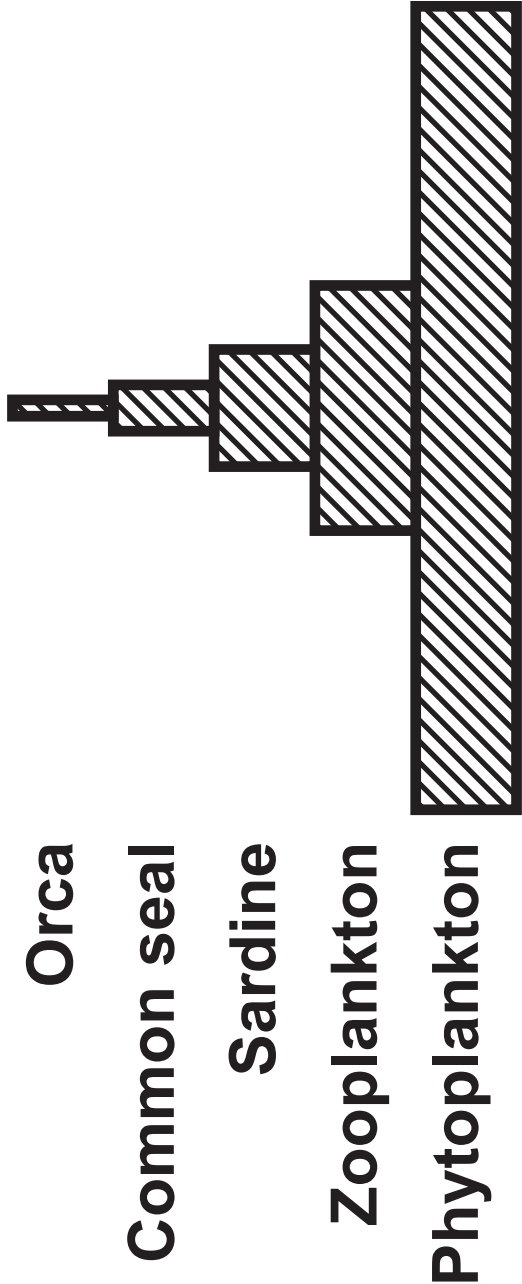
Person with regular heart rhythm



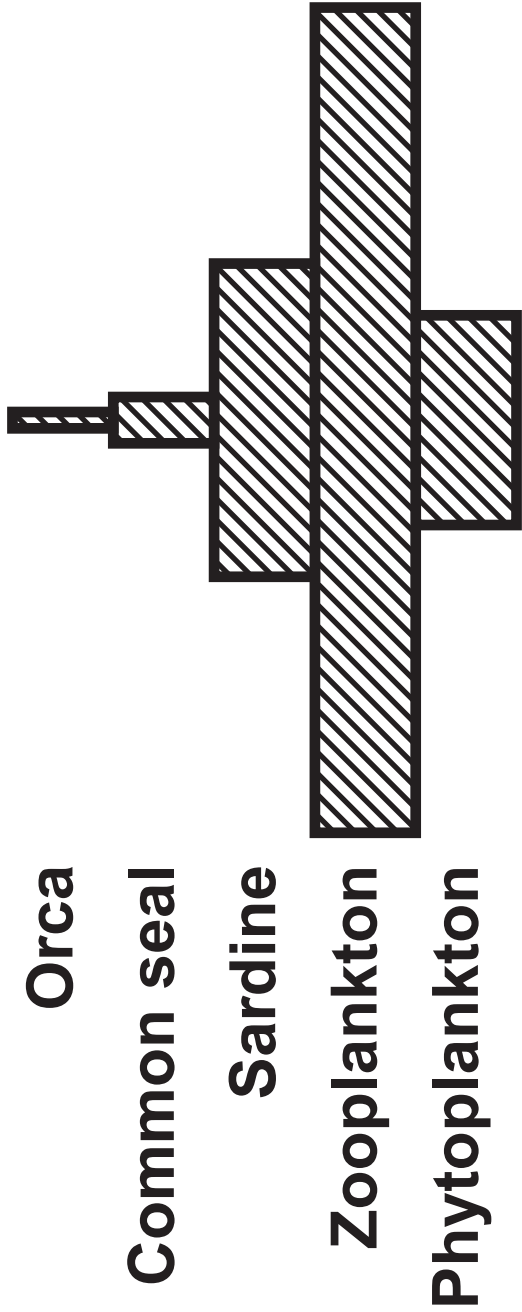
Person with abnormal heart rhythm

Question 9(a)

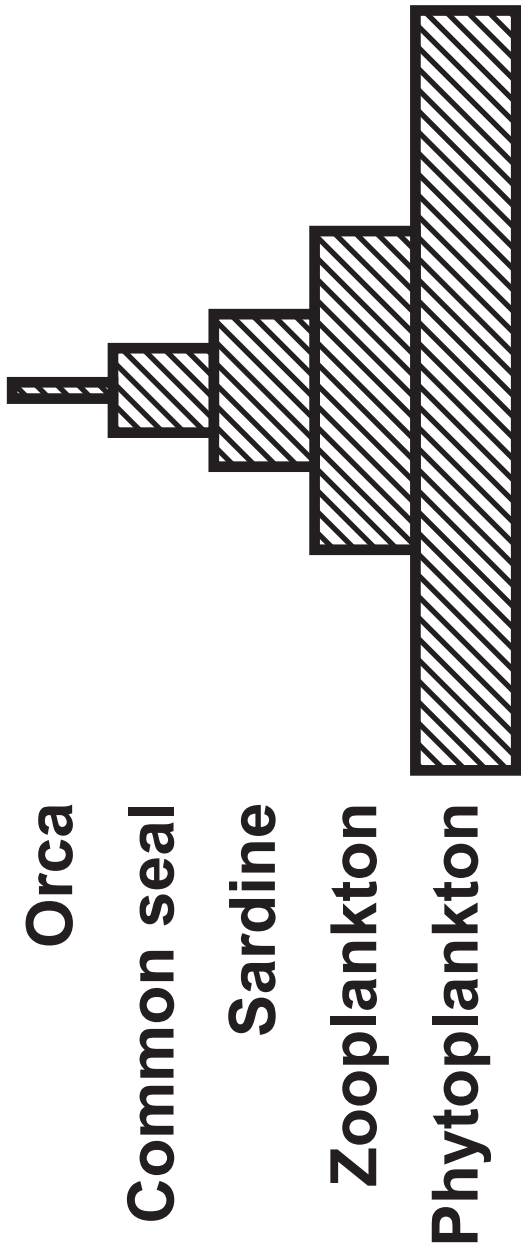
Pyramid of biomass  
for November



Pyramid of biomass  
for December



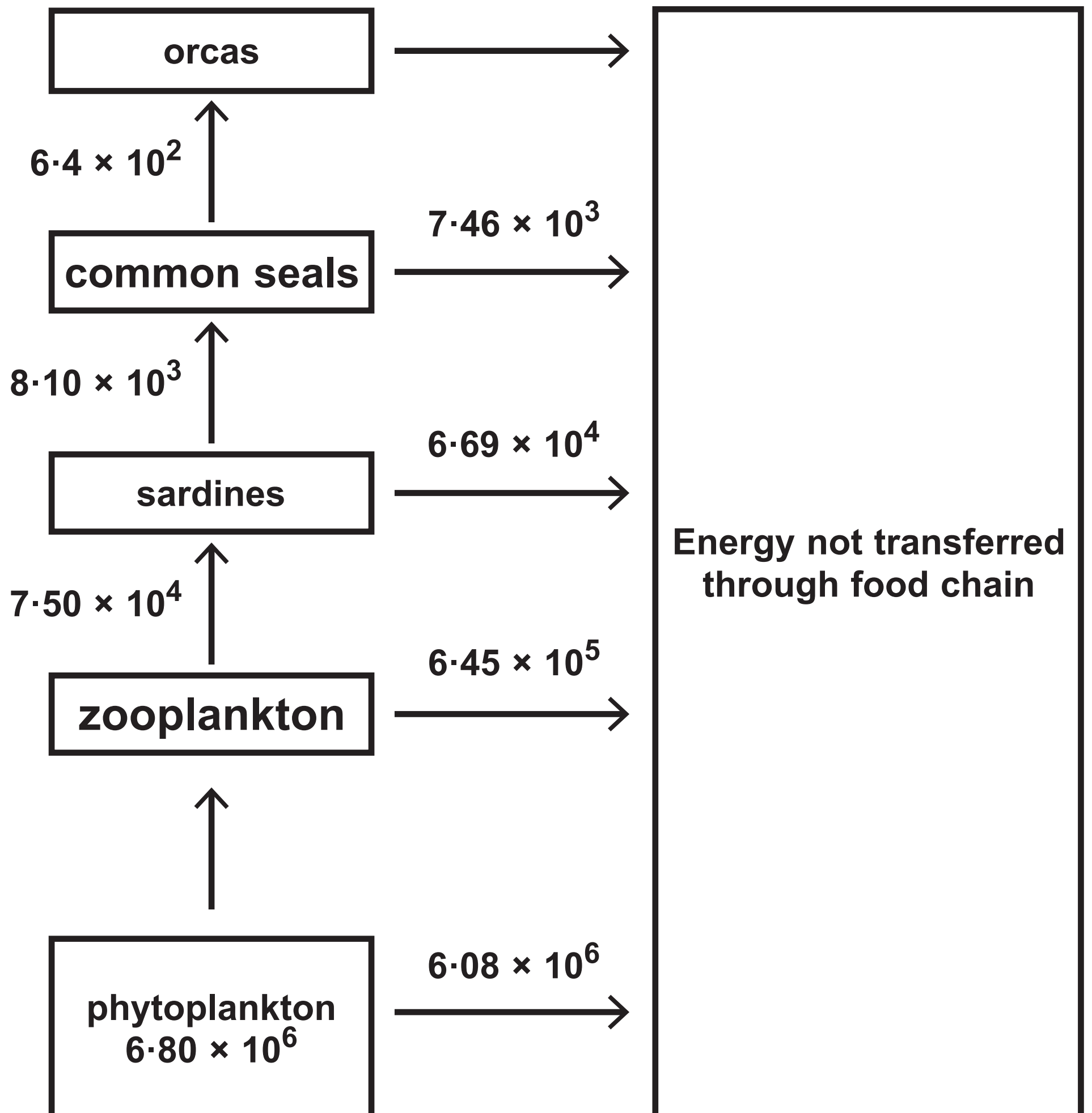
Pyramid of energy for one  
whole year



The units for biomass are  $\text{kg m}^{-3}$

The units for energy are  $\text{kJ m}^{-3} \text{yr}^{-1}$

## Question 9(b)





Light intensity / arbitrary units	Mean increase in dry biomass of phytoplankton / g		
	10 °C	20 °C	30 °C
	4	6	2
5			
10	8	10	4
15	10	20	15
20	12	24	28
25	12	28	35

**Question 3:**

**(Source: © M. I. WALKER / SCIENCE PHOTO LIBRARY)**

**Question 4(a):**

**(Source ©BOB GIBBONS / SCIENCE PHOTO LIBRARY)**

**Question 6(b):**

**(Source: © [https://commons.wikimedia.org/wiki/File:Lophiomyx\\_imhausi.jpg](https://commons.wikimedia.org/wiki/File:Lophiomyx_imhausi.jpg))**