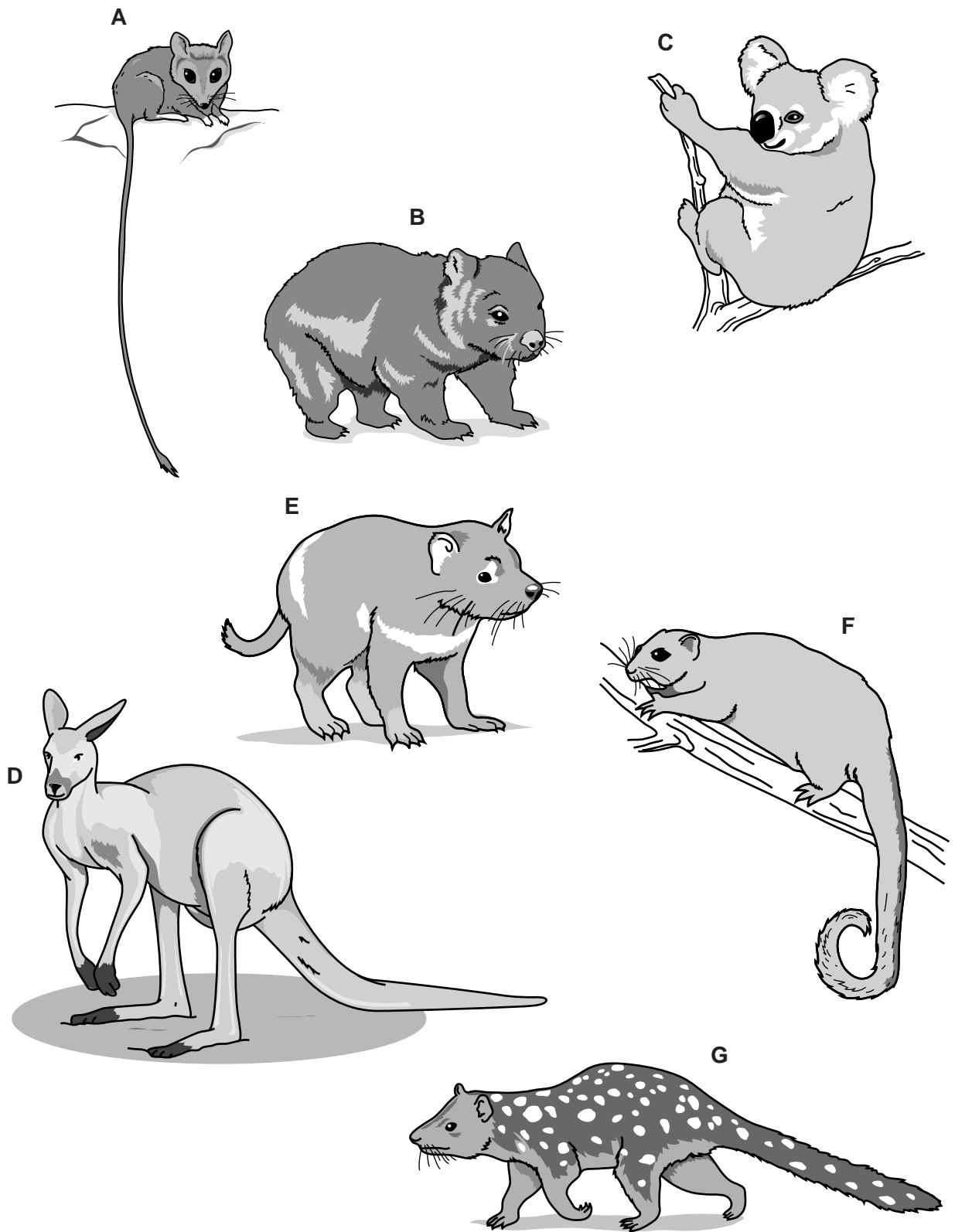


1 Fig. 1.1 shows seven marsupial mammals.



not drawn to scale

Fig. 1.1

- (a) (i) State **one** visible feature that could be used to identify the marsupials in Fig. 1.1 as mammals.

.....[1]

- (ii) Use the key to identify each species. Write the letter of each species (**A** to **G**) in the correct box beside the key. One has been done for you.

key

1 (a)	tail visible	go to 2	
(b)	no tail visible	go to 3	
2 (a)	back feet at least twice as long as front feet	go to 4	
(b)	back feet and front feet of similar length	go to 5	
3 (a)	large ears relative to the size of the head	<i>Phascolarctos cinereus</i>	
(b)	small ears relative to the size of the head	<i>Vombatus ursinus</i>	
4 (a)	tail at least twice as long as body	<i>Sminthopsis longicaudata</i>	
(b)	tail less than twice as long as body	<i>Macropus rufus</i>	
5 (a)	uniform body colouring	<i>Paljara tirarensis</i>	
(b)	markings on body	go to 6	
6 (a)	white band across back and chest	<i>Sarcophilus harrisii</i>	
(b)	no white band across back and chest	<i>Dasyurus maculatus</i>	G

[3]

- (b) Sexual reproduction occurs in all mammals. A zygote is formed from the fertilisation of a male gamete and a female gamete.

- (i) Name the process that results in the formation of haploid gametes.

.....[1]

- (ii) Explain the importance of sexual reproduction in mammals.

.....

.....[3]

(c) Marsupials differ from other mammals by giving birth to relatively undeveloped offspring. Female humans have a placenta and therefore give birth to more developed offspring.

(i) Describe the role of the placenta in humans.

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.....
.....
.....[4]

(ii) In humans, the placenta is connected to the amniotic sac which contains amniotic fluid.
State **two** functions of the amniotic fluid.

.....
.....
.....
.....
.....
.....[2]

[Total: 14]

2 Fig. 2.1 shows the changes in a human ovary during the first part of the menstrual cycle and after the fertilisation of an egg.

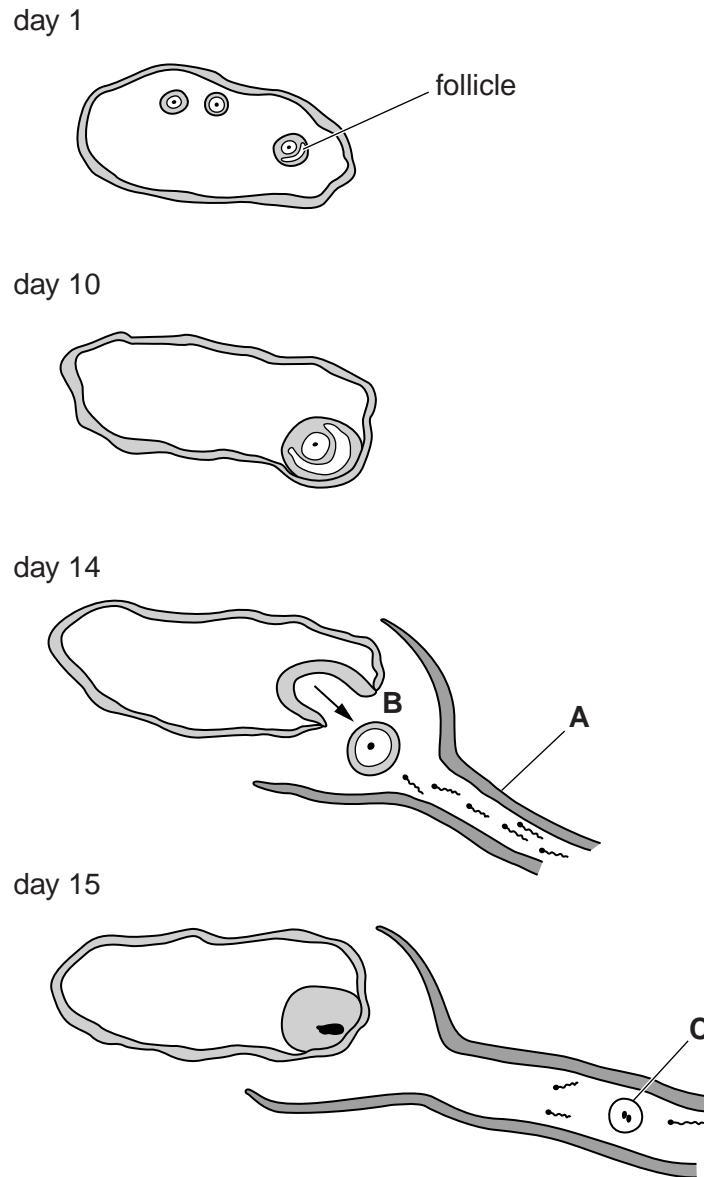


Fig. 2.1

- (a) (i) Name:
- organ A
- process B
- cell C. [3]
- (ii) Name the hormone that promotes:
- the growth of the follicle
- process B. [2]

(iii) Explain how a sperm cell is adapted for its functions.

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.....
.....[3]

(b) Explain the advantages of sexual reproduction to an animal species.

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.....
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.....[5]

[Total: 13]

3 Fungi were often classified as different species according to their visible reproductive structures.

Penicillium dodgei and *Eupenicillium brefeldianum* were classified as different species because they had different types of spores.

However, recently it was recognised that the spores of *P. dodgei* were asexual spores, while those of *E. brefeldianum* were sexual spores. A comparison of the DNA of these two fungi shows that they are the same species.

This fungus is now known as *Penicillium brefeldianum*.

(a) State how DNA analysis can show that *P. dodgei* and *E. brefeldianum* are the same species.

.....
.....
.....[2]

(b) (i) Describe how a fungus, such as *P. brefeldianum*, reproduces asexually.

.....
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.....
.....
.....
.....[3]

(ii) Discuss the advantages of **asexual** reproduction.

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.....
.....[3]

[Total: 8]

4 Fig. 5.1 shows a species of bacterium, *Lactobacillus bulgaricus*.

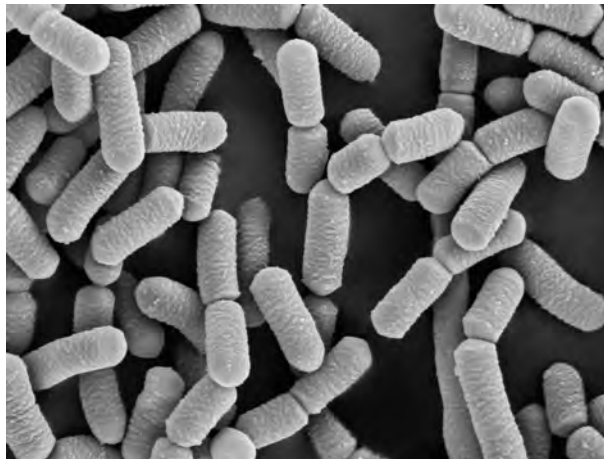


Fig. 5.1

(a) List **two** features that distinguish bacteria from other groups of organisms.

1

2 [2]

(b) *L. bulgaricus* are added to milk to make yoghurt.

Fig. 5.2 shows the changes in a population of *L. bulgaricus* during fermentation to make yoghurt.

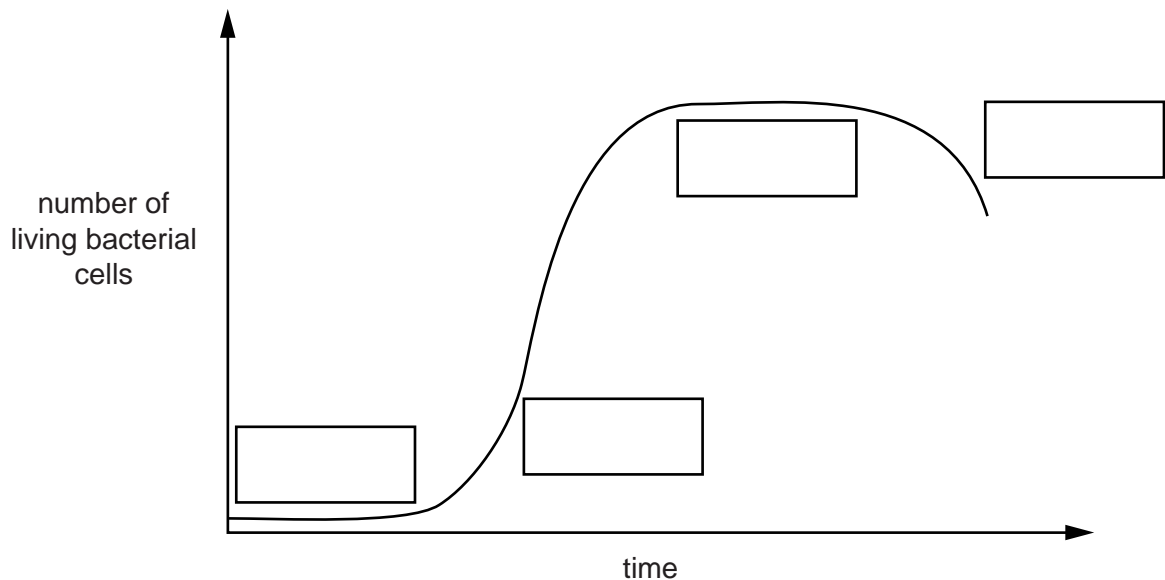


Fig. 5.2

(i) Name the stages shown on Fig. 5.2. Write your answers in the boxes on Fig. 5.2. [4]

(ii) Explain why the population of *L. bulgaricus* does not continue to increase during the fermentation to make yoghurt.

.....
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..... [2]

(c) The curve shown in Fig. 5.2 is a sigmoid population growth curve.

Define the term *growth*.

.....
.....
.....
.....
..... [2]

(d) Bacteria, such as *L. bulgaricus*, can reproduce rapidly.

Name the process of reproduction in bacteria.

..... [1]

- (e) Sometimes food additives are added to yoghurt. Some people suggest that it is healthier to eat yoghurt without additives.

Suggest the advantages and disadvantages of putting food additives into yoghurt.

advantages

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.....

.....

disadvantages

.....

.....

..... [4]

[Total: 15]