the host nor do the animals outgrow the algae[1]. In experiments described here we found that when the upper two-thirds of a hydra was removed, there was a pronounced increase in the number of algae per digestive cell in the remaining peduncle of the animal. The observed increase in algal numbers was not a function of starvation and could be abolished by grafting a head, from a donor animal, on to the peduncle. We believe that our experiments are the first to show that the reproduction of symbiotic algae may be influenced by the host and that the presence of a head, thought to be responsible for maintenance of polarity and other morphological phenomena in hydra[2], may also influence the reproduction of symbiotic algae.

We used a variant of the green hydra, referred to as the English strain. Animals were reared and maintained under a 12 h light/12 h dark photoperiod and fed *Artemia nauplii*[3]. Five experimental organisms were macerated together and a sample of the resulting cell suspension was examined under a compound microscope. The algae in 150 randomly selected digestive cells were counted[1,4].

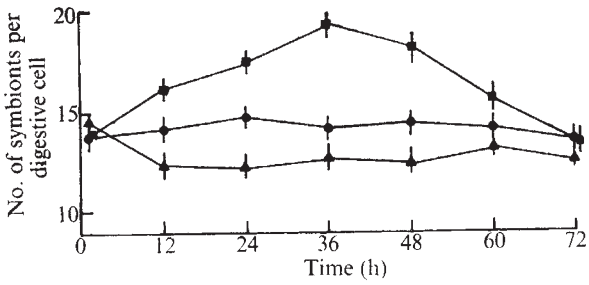

Fig. 1 Average number of algae per digestive cell from peduncle region of hydra at various times after removal of the upper two-thirds of the animal. Vertical bars show the standard error, $n = 150$ digestive cells. ■, Regenerating peduncle: analysis of variance indicates significant difference between points ($P < 0.001$). ▲, Peduncles removed from unfed animals at time of counting: analysis of variance indicates no significant difference between points ($P > 0.10$). ●, Peduncles with grafted heads: analysis of variance indicates no significant difference between points.

In our first experiment we removed the upper two-thirds (head, gastric and budding regions) of a group of hydra. At 12-h intervals after amputation, the algae per digestive cell were counted in the regerating peduncles. Green hydra normally maintains about 15 algae per digestive cell in the peduncle region. The regenerating peduncles did not eat throughout the experiment. Thus for controls, peduncles freshly isolated from unfed, intact animals were also analysed. Figure 1 shows that in regenerating peduncles the number of algal symbionts per digestive cell increased 25% from about 14 to 20 within 36 h of amputation of the upper two-thirds of the animal. After this increase in symbionts there was a decline in numbers per cell until the original level was established at 72 h, when the peduncle had regenerated the head and could feed. No change in algae per cell was observed in the control animals (Fig. 1*b*).

To determine the possible influence of the head region on the growth of algae in the peduncle, we grafted heads from donor animals to the amputated peduncles. As before, these organisms were not fed and were analysed every 12 h. As Fig. 1 shows, there was no increase in the number of algae per digestive cell in peduncles with grafted heads. Furthermore, there was no change in the number of algae per digestive cell in the upper gastric region (with heads) after amputation of peduncles (Fig. 2). These cells in the upper region normally contain approximately 20 symbionts.

Apparently the presence of a grafted head region prevented or inhibited the algal increase observed in the absence of the head region. It has been suggested that the head region is the site of morphogenetic substances which maintain the normal polarity and organisation of the animal[5]. Our results suggest that factors associated with the head inhibit algal reproduction in the peduncle also. These factors might act directly on the reproductive processes of the algae or indirectly through processes in the host's digestive cells in which the symbionts reside. When amputated, the peduncle tissue is removed from the influence of the head and the symbionts, now released from inhibition, begin multiplying.

It is not clear how the number of algal symbionts is reduced after the initial increase (Fig. 1). A possibility is that subsequent host cell division causes parcelling of the symbionts among the daughter digestive cells. The relationship between the head and animal cell division in the peduncle is unknown.

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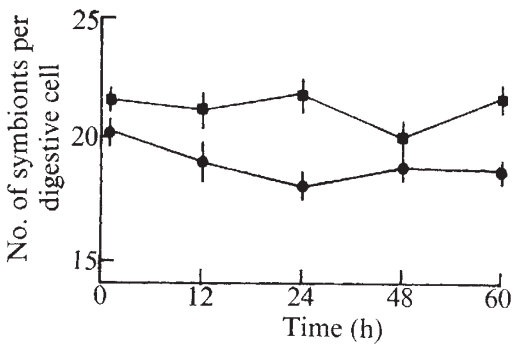
Fig. 2 Average number of algae per digestive cell from gastric region of hydra. Vertical bars show the standard error, $n = 150$ digestive cells. ■, Gastric region from animals after amputation of peduncle: analysis of variance indicates no significant difference between points. ●, Number of algae per digestive cell of gastric region removed from unfed animals at time of counting: analysis of variance indicates no significant difference between points.



Errata

In the article "Involvement of DNA in resistance of potatoes to invasion by *Phytophthora infestans*" by M. Yamamoto and K. Matsuo (*Nature*, **259**, 63; 1976) the legends to Figs 1 and 2 were transposed.

In the article "The complete nucleotide sequence of bacteriophage MS2 DNA : primary and secondary structure of the replicase gene" by W. Fiers *et al.* (*Nature*, **260**, 500; 1976) Figs 1 and 5 have been transposed.

In the article "Brain immunoreactive gonadotropin-releasing hormone in Huntington's chorea and in non-choreic subjects" by E. D. Bird, S. A. Chiappa and G. Fink (*Nature*, **260**, 536; 1976) page 538, lines 8–9 In the female this could not account . . . should read In the female this could account. . . .