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A scanning electron microscope study on the route of entry of clorsulon into the liver fluke, *Fasciola hepatica*

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Figures 1–29 appeared too dark in the printed version of the article. The correct figures are shown here.

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Figs. 1–6 Scanning electron micrographs (SEMs) of the tegumental surface of control (Figs. 1, 2) and clorsulon-treated (Figs. 3–6) *Fasciola hepatica* which had been incubated in vitro for 24 h (non-ligatured flukes)

Fig. 1 The ventral surface of a control fluke showing the oral sucker (OS) and ventral sucker (VS) on the apical cone of the fluke. The cirrus (C) is also visible extending from the gonopore. *Bar* 2 mm

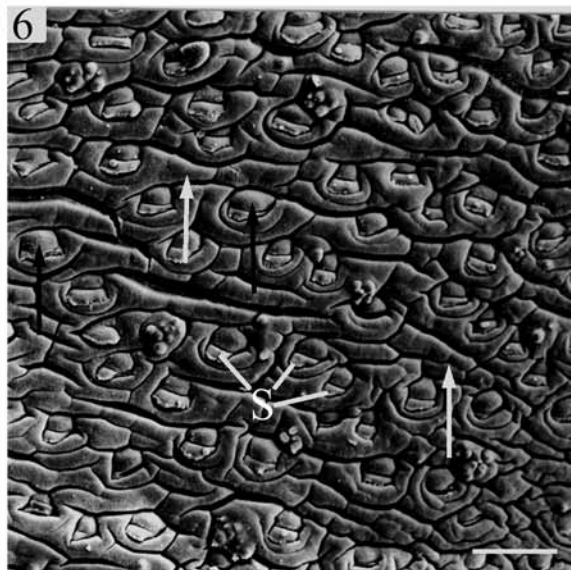
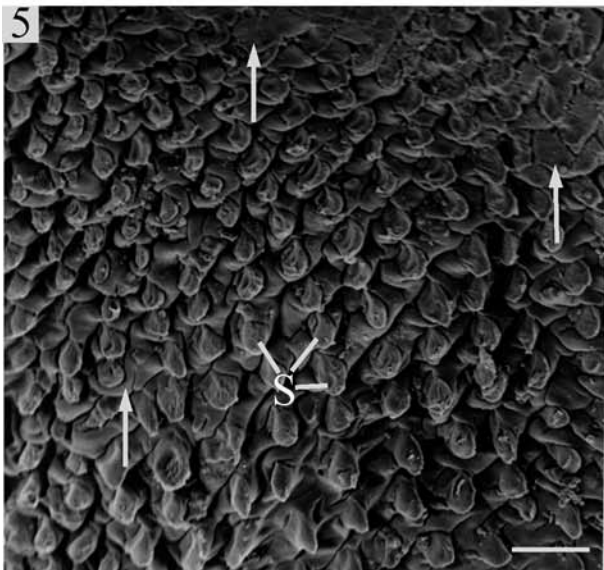
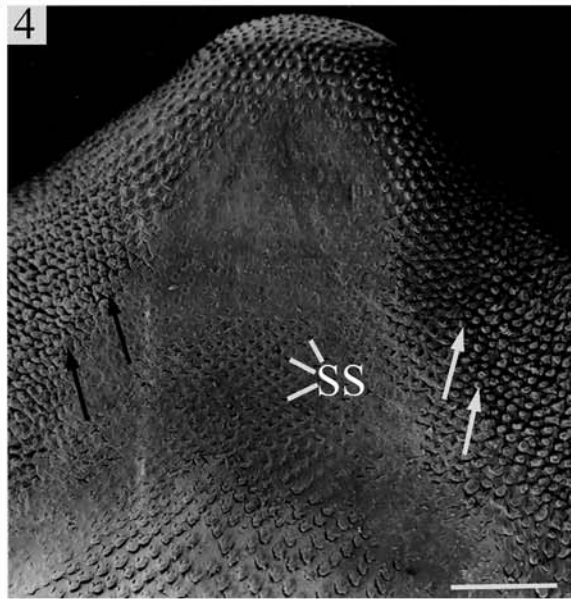
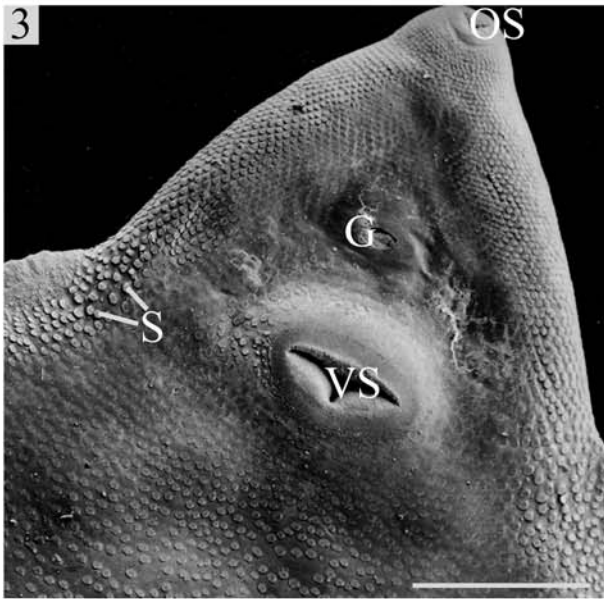
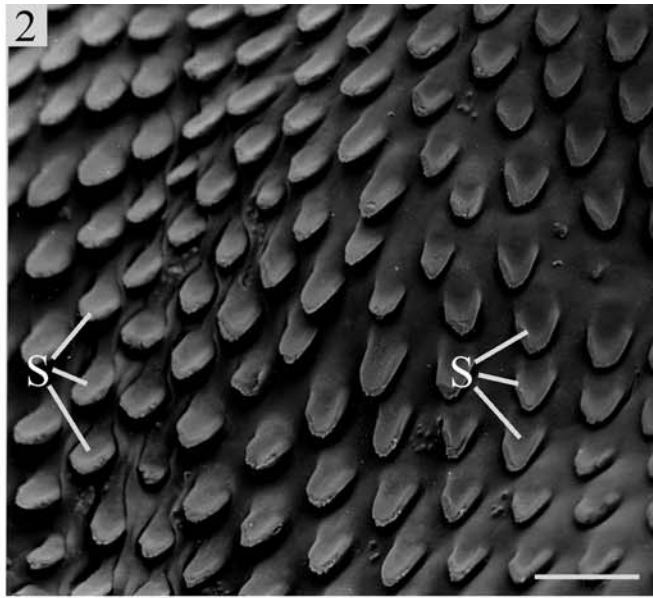
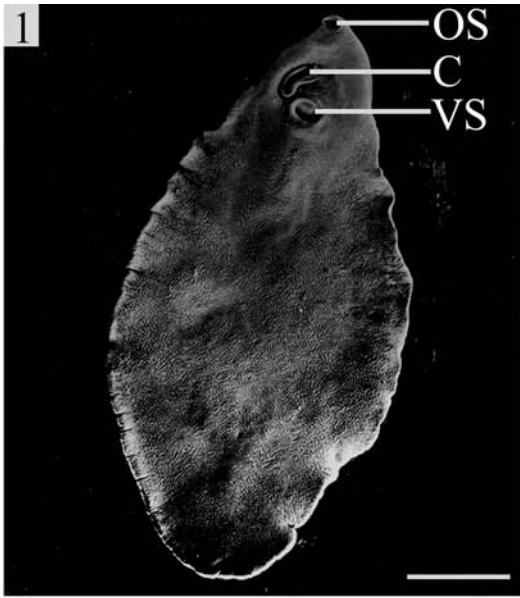
Fig. 2 Spines (S) from the anterior midbody region of the dorsal surface of a control fluke. Serrated tips can be seen on a number of the spines. *Bar* 50 µm

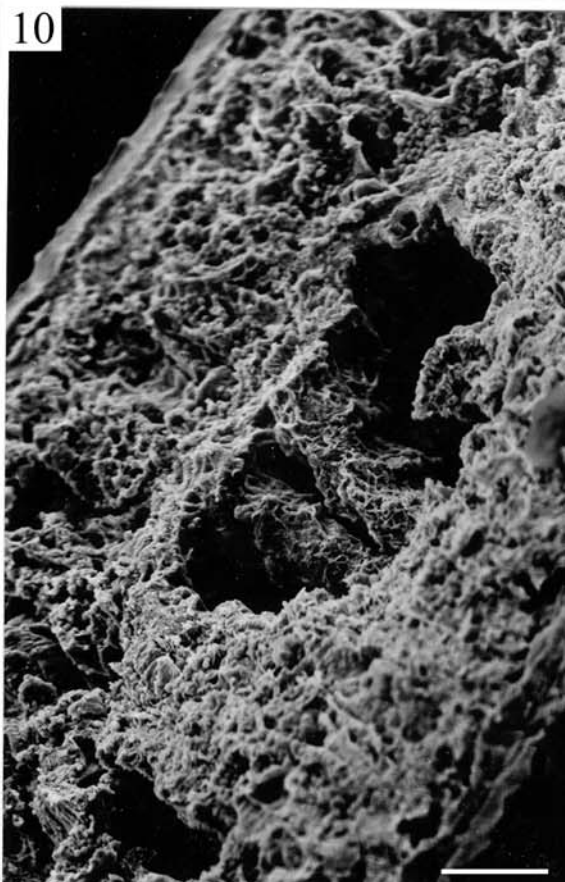
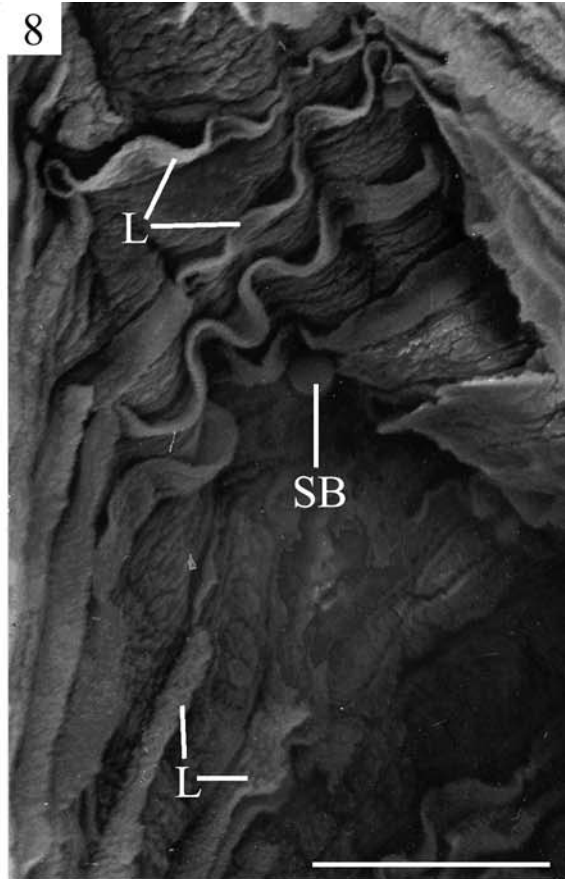
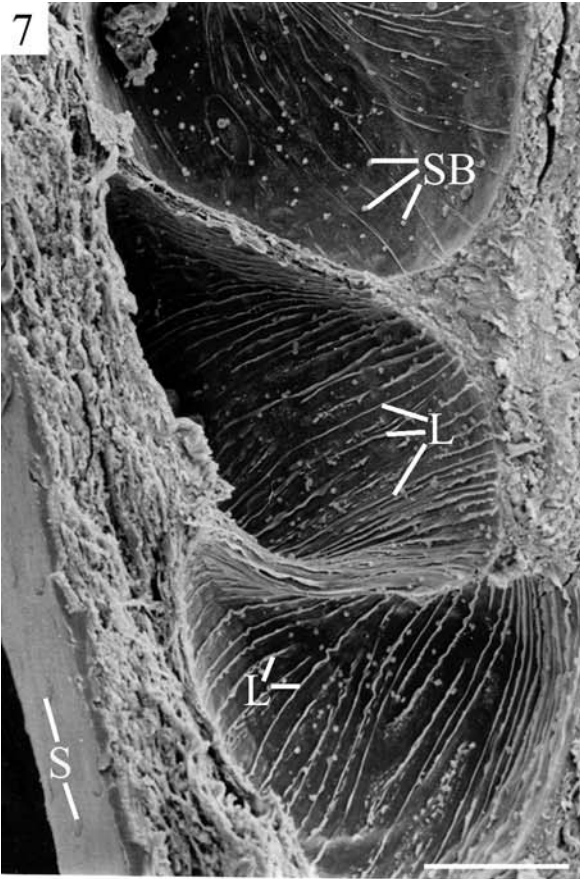
Fig. 3 Ventral surface of the apical cone showing the oral sucker (OS), ventral sucker (VS) and the gonopore (G). Spines (S) can be seen covering the surface of the tegument. *Bar* 400 µm

Fig. 4 Dorsal surface of the apical cone showing sunken spines (SS) and severe swelling of the tegument both covering (*white arrows*) and between (*black arrows*) the spines. *Bar* 200 µm

Fig. 5 Spines from the lateral margin of the ventral, anterior midbody region. Severe swelling of the tegument can be seen between the spines (*arrows*). The tegument covering the spines (S) is also severely swollen. *Bar* 60 µm

Fig. 6 The lateral margin on the dorsal surface of the posterior midbody region. Spines (S) can be seen protruding from the swollen tegument (*white arrows*) that surrounds them, and the tegument covering the spines themselves is also swollen (*black arrows*). *Bar* 50 µm





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Figs. 7–10 Scanning electron micrographs (SEMs) of the gut of control (Figs. 7, 8) and clorsulon-treated (Figs. 9, 10) *Fasciola hepatica* which had been incubated in vitro for 24 h (non-ligatured flukes)

Fig. 7 The gut lumen of a control fluke in which the lamellae (*L*) can be seen. Spherical bodies (*SB*) are present on the surface of the lamellae and spines (*S*) can also be seen on the tegumental surface of the fluke. *Bar* 200 μm

Fig. 8 High-power SEM of the gut of a control fluke. Large rippled lamellae (*L*) can be seen extending into the lumen and a spherical body (*SB*) is also present on the surface of a lamella. *Bar* 10 μm

Fig. 9 A region of gut in which the lamellae are so disrupted as to be unrecognisable. *Bar* 75 μm

Fig. 10 A severely disrupted region of gut in which the lamellae are disrupted and the tissue appears necrotic. *Bar* 100 μm

▶

Figs. 11–15 Scanning electron micrographs (SEMs) of control (Figs. 11, 12) and clorsulon-treated (Figs. 13–15) *Fasciola hepatica* whose apical cone had been ligatured prior to incubation in vitro for 24 h

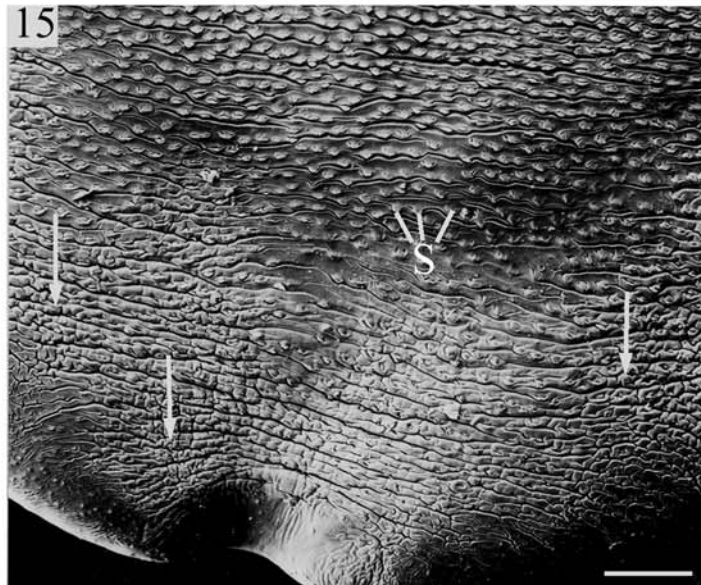
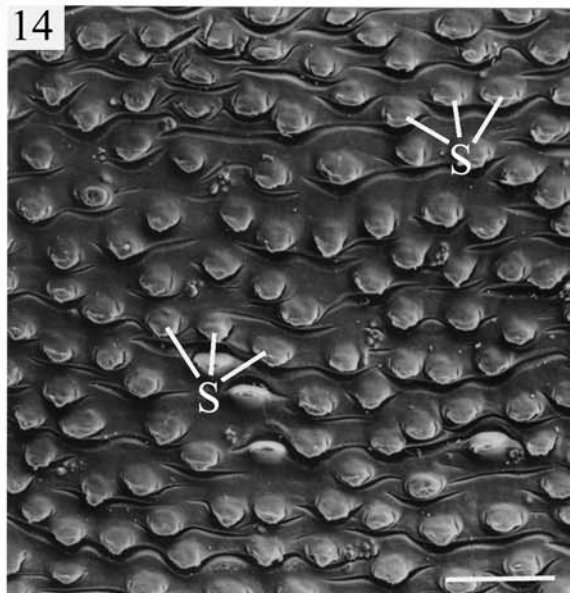
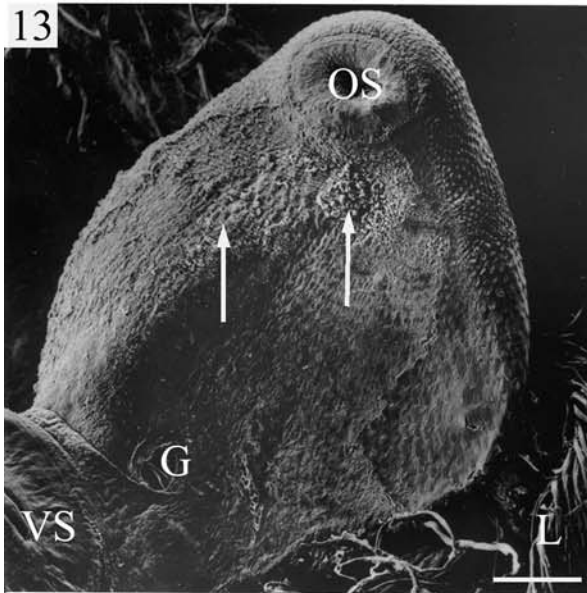
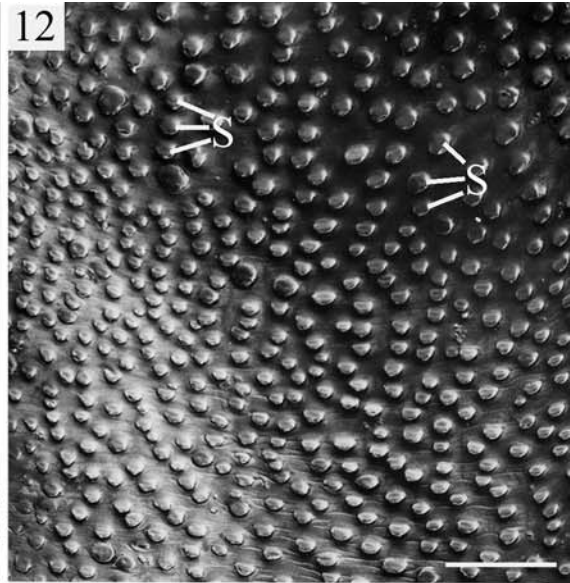
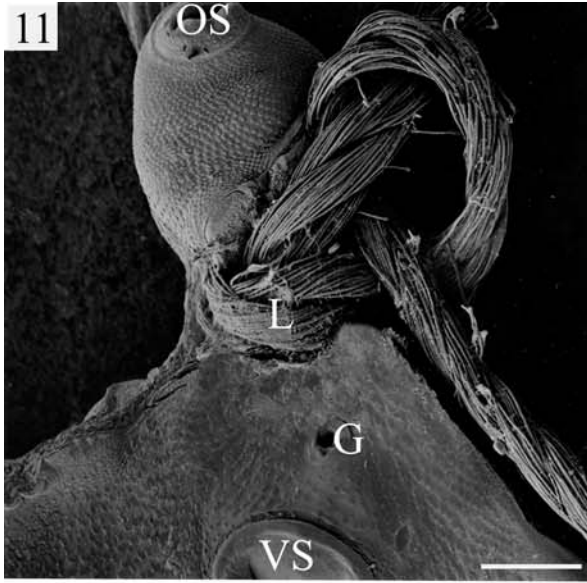
Fig. 11 Control SEM showing the ligature (*L*) below the oral sucker (*OS*). The gonopore (*G*) and the ventral sucker (*VS*) can also be seen on the apical cone. *Bar* 250 μm

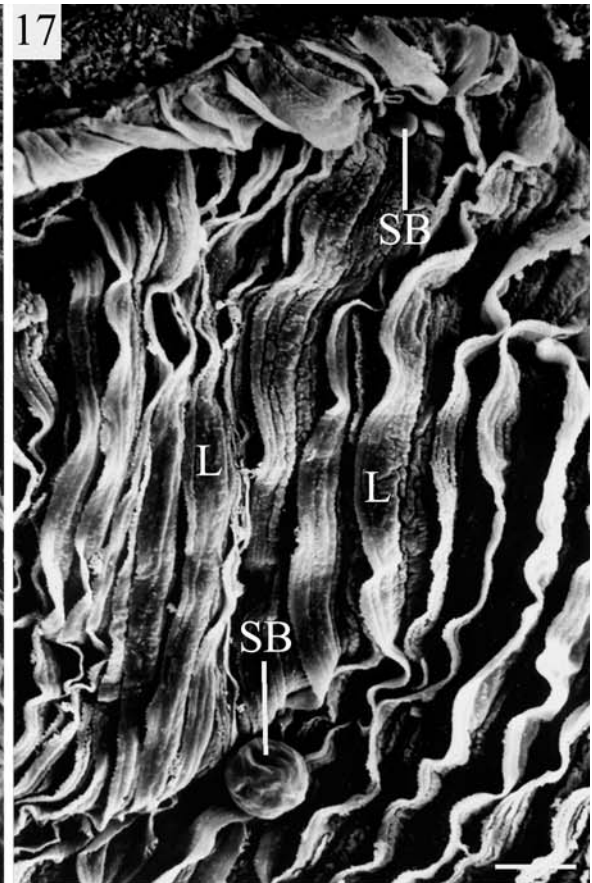
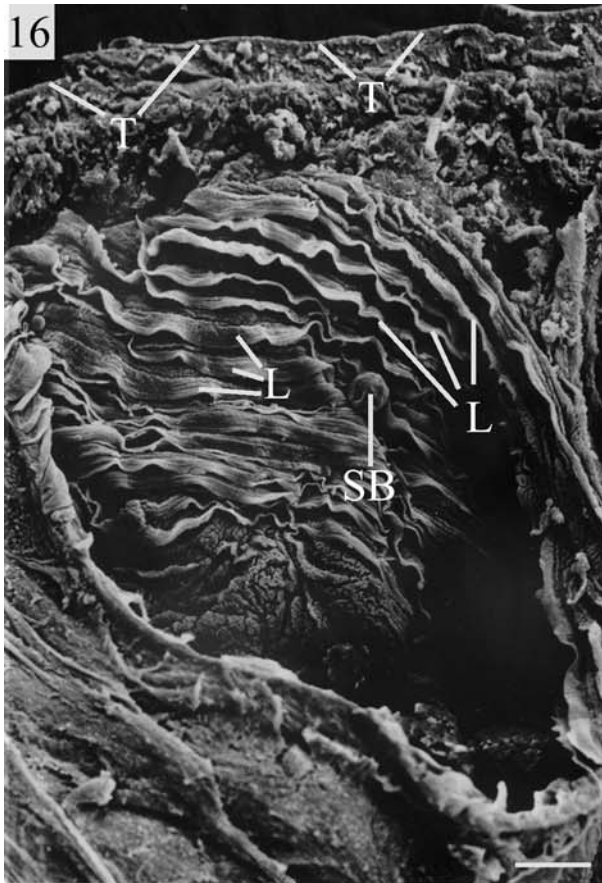
Fig. 12 Spines (*S*) covering the tegument on the dorsal surface in the posterior midbody region of a control fluke. The spines and the tegument appear normal. *Bar* 150 μm

Fig. 13 Apical cone of a ligatured and treated fluke. Sloughing (*arrows*) of the apical plasma membrane of the tegument can be seen posterior to the oral sucker (*OS*). The gonopore (*G*) and the ventral sucker (*VS*) can be seen anterior to the ligature (*L*). *Bar* 200 μm

Fig. 14 Tegument and spines (*S*) from the dorsal surface in the posterior midbody region. The surface appears normal. *Bar* 50 μm

Fig. 15 Swelling of the tegument (*arrows*) surrounding the spines in the tail region on the dorsal surface. Normal spines (*S*) can be seen anterior to the tail in the posterior midbody region. *Bar* 200 μm







Figs. 16–19 Scanning electron micrographs (SEMs) of the gut of control (Figs. 16, 17) and clorsulon-treated (Figs. 18, 19) *Fasciola hepatica* whose apical cone had been ligatured prior to incubation in vitro for 24 h

Fig. 16 Rippled sheets of lamellae (*L*) inside the gut lumen of a control fluke. A large spherical body (*SB*) is present on the surface of a lamella. The tegument (*T*) can be seen above this section of gut. *Bar* 150 μm

Fig. 17 High-power SEM showing rippled sheets of lamellae (*L*) and spherical bodies (*SB*) in the gut of a control fluke. *Bar* 75 μm

Fig. 18 Gut from a treated fluke. Normal rippled lamellae (*L*) can be seen extending into the lumen. *Bar* 75 μm

Fig. 19 High-power SEM from a treated fluke showing normal lamellae (*L*) and spherical bodies (*SB*) attached to them. *Bar* 100 μm



Figs. 20–25 Scanning electron micrographs (SEMs) of red blood cell-fed control (Figs. 20, 21) and clorsulon-bound red blood cell-fed (Figs. 22–25) *Fasciola hepatica* which had been incubated in vitro for 24 h

Fig. 20 Apical cone and ventral surface of a control fluke showing the oral sucker (*OS*), cirrus (*C*) protruding from the gonopore and the ventral sucker (*VS*). Swelling of the tegument between the spines (*arrows*) can be seen between the oral sucker and cirrus. *Bar* 250 μm

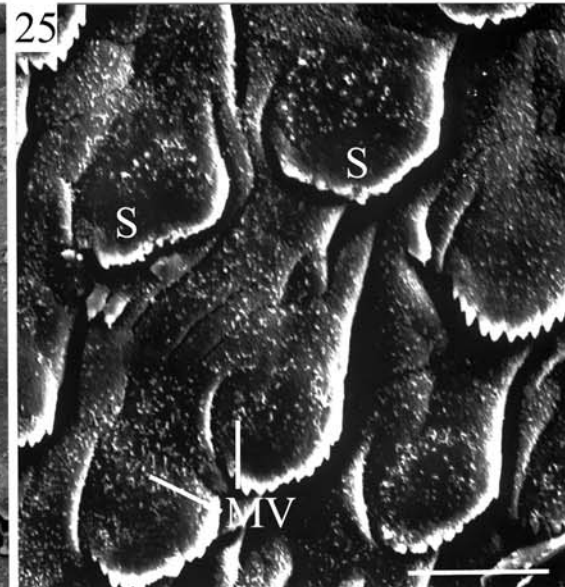
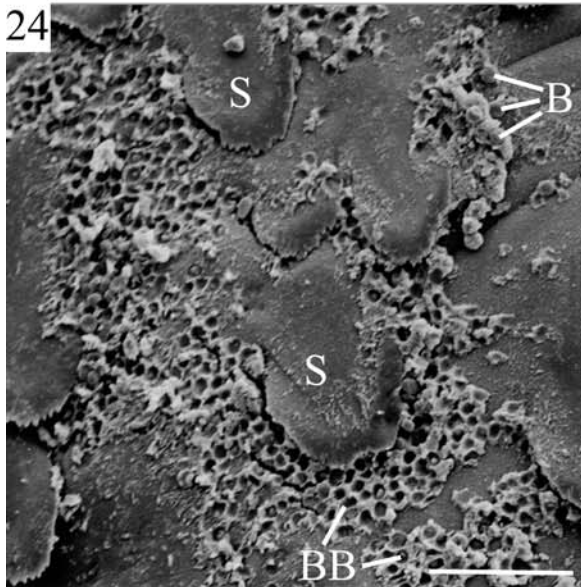
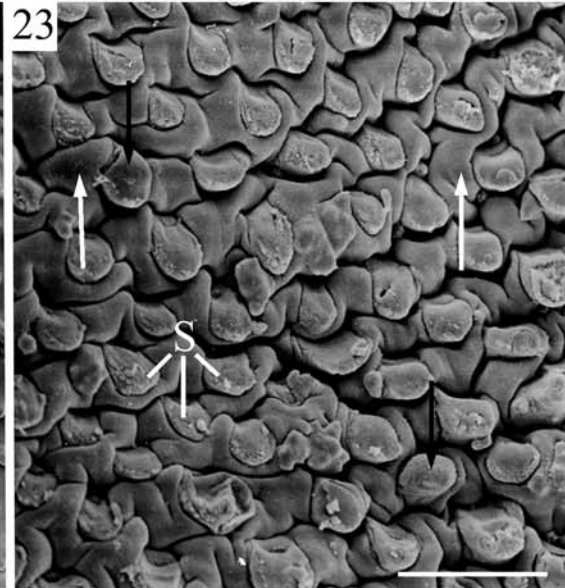
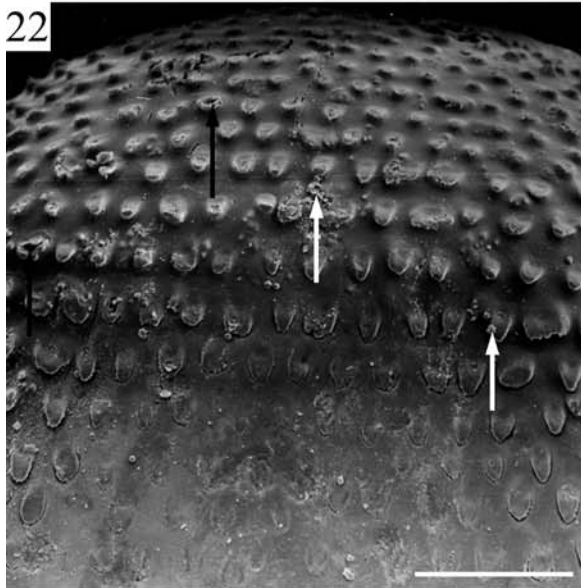
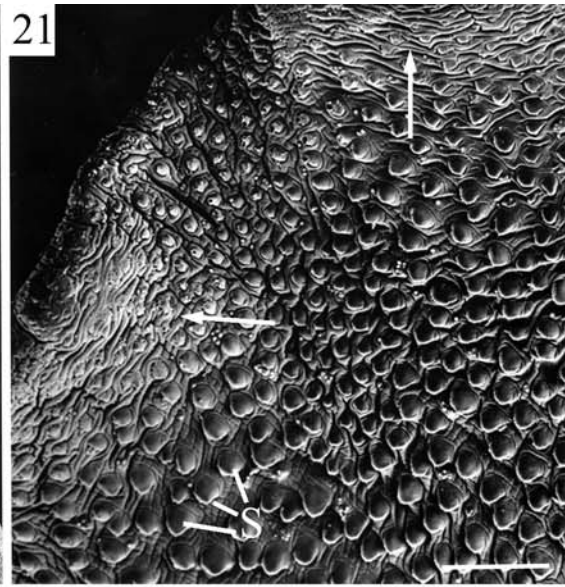
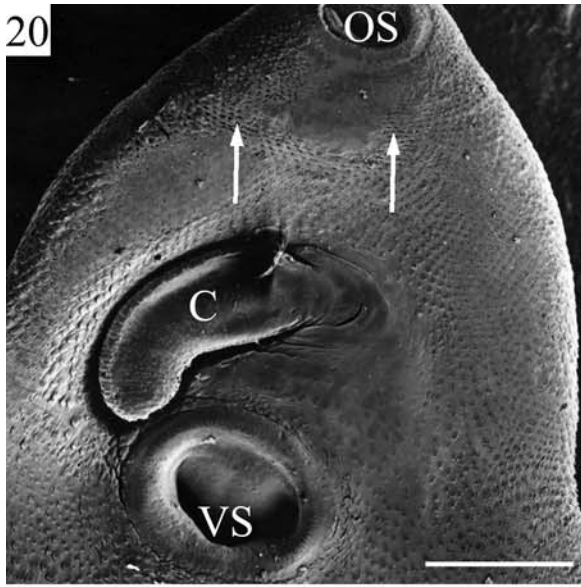
Fig. 21 The anterior midbody region, towards the lateral margin on the dorsal surface of a control fluke. Slight swelling of the tegument (*arrows*) between and surrounding the spines (*S*) is evident. *Bar* 75 μm

Fig. 22 Apical cone and dorsal surface showing disruption in the form of tegument sloughing at the tips of the spines (*black arrows*) and small blebs (*white arrows*) on the tegumental surface between the spines. *Bar* 75 μm

Fig. 23 Ventral surface, towards the lateral margin of the anterior midbody region, showing severe swelling of the tegument (*white arrows*) between the spines (*S*) and also swelling of the tegument (*black arrows*) covering the backs of the spines. *Bar* 50 μm

Fig. 24 Ventral surface in the anterior midbody region showing blebs (*B*) covering the surface of the tegument between the spines (*S*). Most of the blebs have burst (*BB*). *Bar* 20 μm

Fig. 25 Dorsal surface, in the posterior midbody region, showing microvillus-like projections (*MV*) on both the tegument between and covering the spines (*S*). *Bar* 20 μm





Figs. 26–29 Scanning electron micrographs (SEMs) of the gut of red blood cell-fed control (Figs. 26, 27) and clorsulon-bound red blood cell-fed (Figs. 28, 29) *Fasciola hepatica* which had been incubated in vitro for 24 h

Fig. 26 High-power SEM of a region of gut from a control fluke showing the rippled lamellae (*L*) extending into the gut lumen. *Bar* 150 μm

Fig. 27 High-power SEM showing rippled lamellae (*L*) extending into the lumen of a section of control gut. The surface of the lamellae is roughened with microvillus-like projections (*arrows*). *Bar* 50 μm

Fig. 28 Gut lumen showing severely disrupted lamellae (*L*) which have almost totally lost their normal appearance and organisation. *Bar* 200 μm

Fig. 29 Disrupted gut lamellae (*L*) which have lost their normal structure and look very frayed. *Bar* 100 μm

