

Kas Sistemi

Kasların vücut duvarına bağlanması

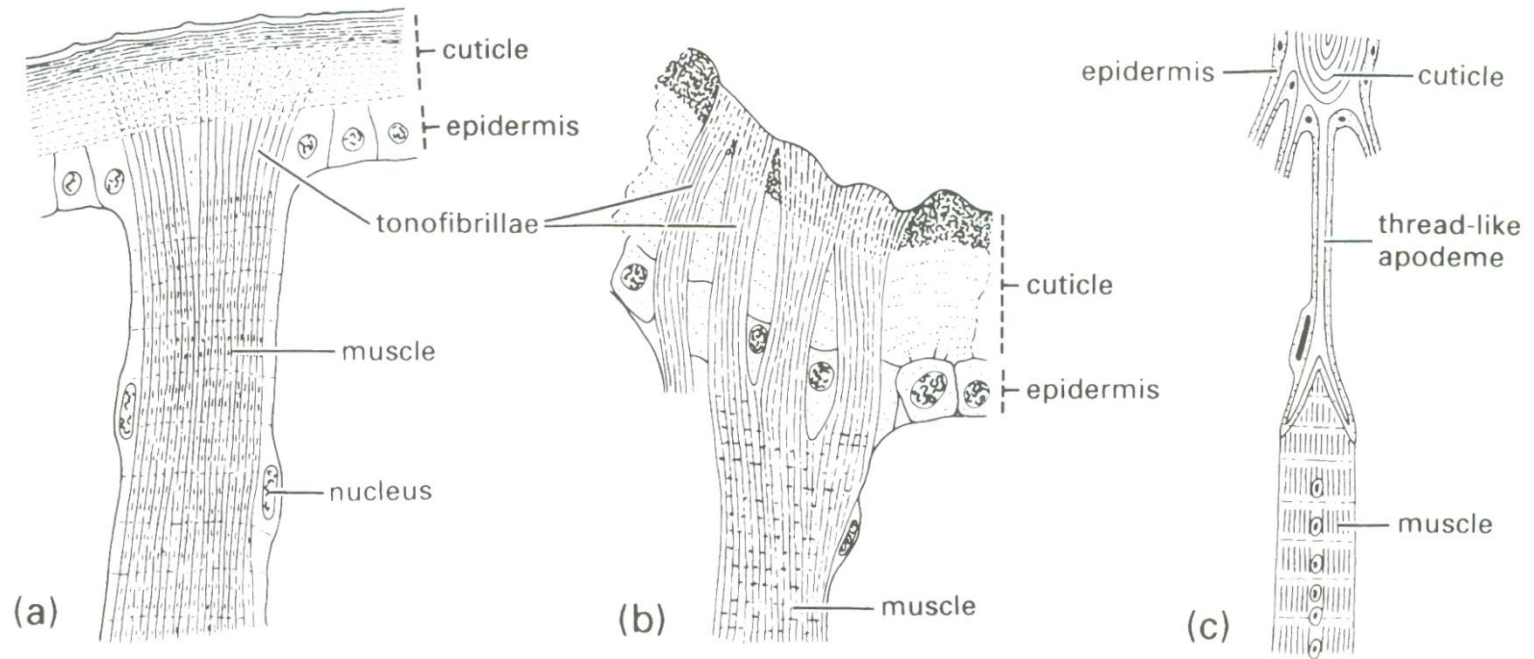
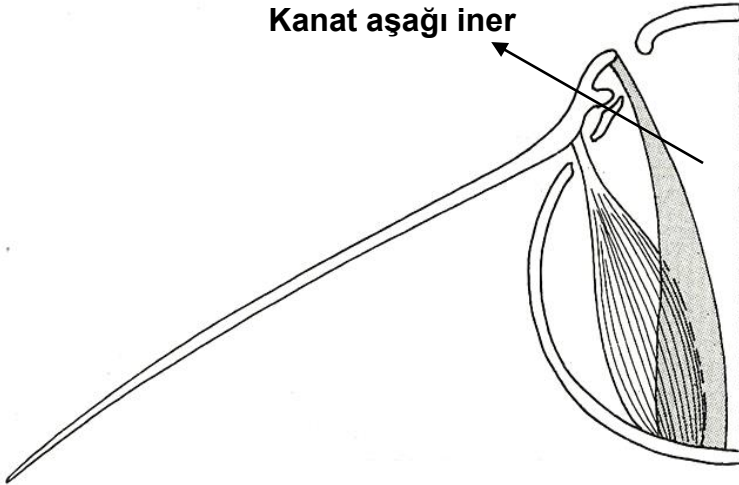


Fig. 3.2 Muscle attachments to body wall: (a) tonofibrillae traversing the epidermis from the muscle to the cuticle; (b) a muscle attachment in an adult beetle of *Chrysobothrus femorata* (Coleoptera: Buprestidae); (c) a multicellular apodeme with a muscle attached to one of its thread-like, cuticular "tendons" or apophyses. (After Snodgrass 1935.)

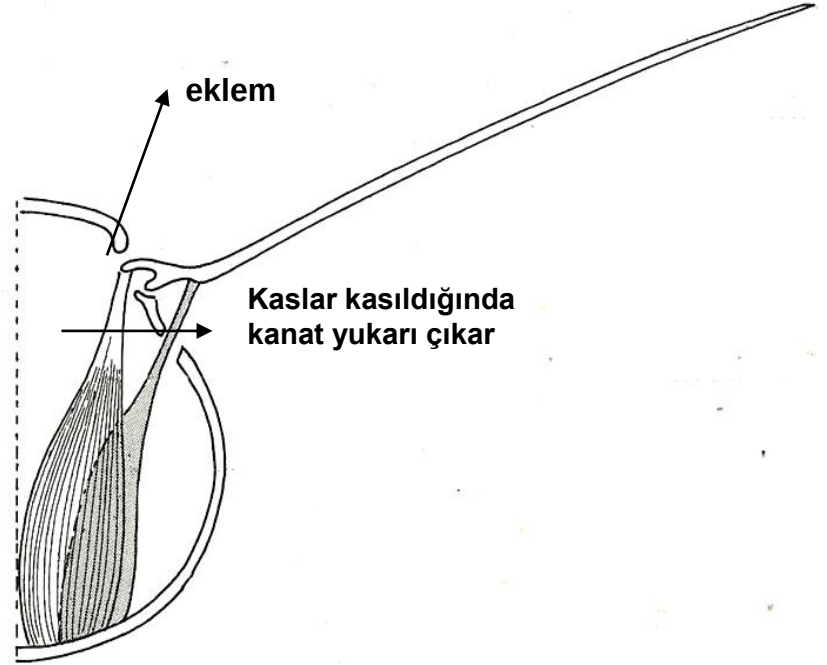
Direkt kasların bağlanma şekli

kaslar kasıldığında
Kanat aşağı iner



eklem

Kaslar kasıldığında
kanat yukarı çıkar



Kanat hareketlerini sağlayan kasları içeren torakstan enine kesit

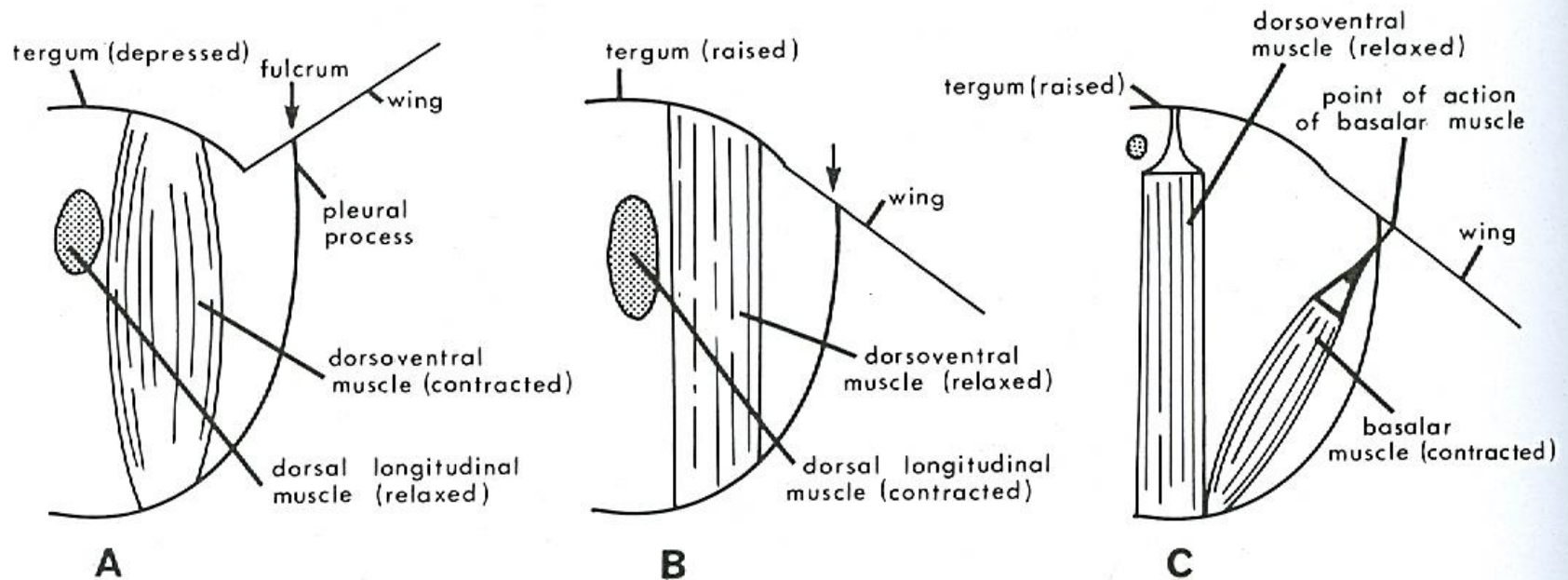


FIGURE 14.12. Diagrammatic transverse sections of thorax to show muscles used in upstroke and downstroke. (A) Use of indirect muscles to raise wing, (B) use of indirect muscles to lower wing, and (C) use of direct muscles to lower wing. [After R. F. Chapman, 1971, *The Insects: Structure and Function*. By permission of Elsevier North-Holland Inc. and the author.]

Direkt kaslarla Uçma mekanizması

İndirekt kaslarla Uçma mekanizması

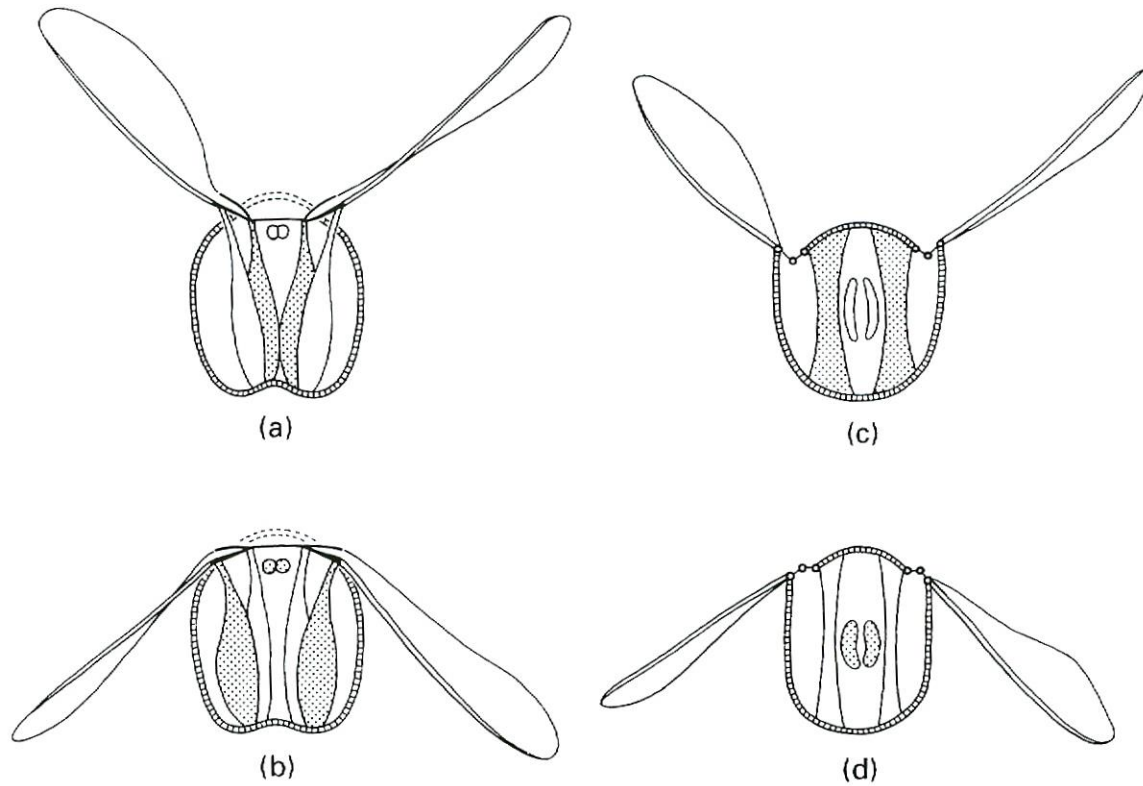
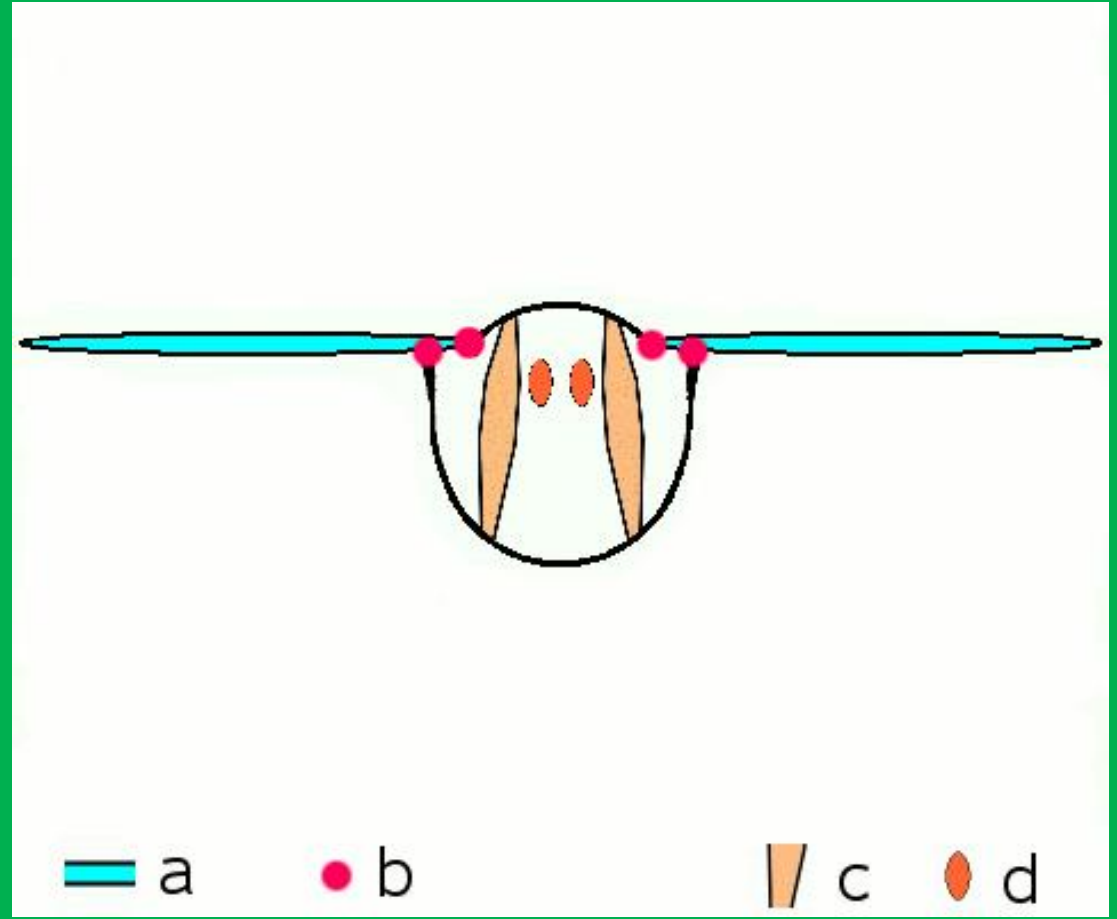
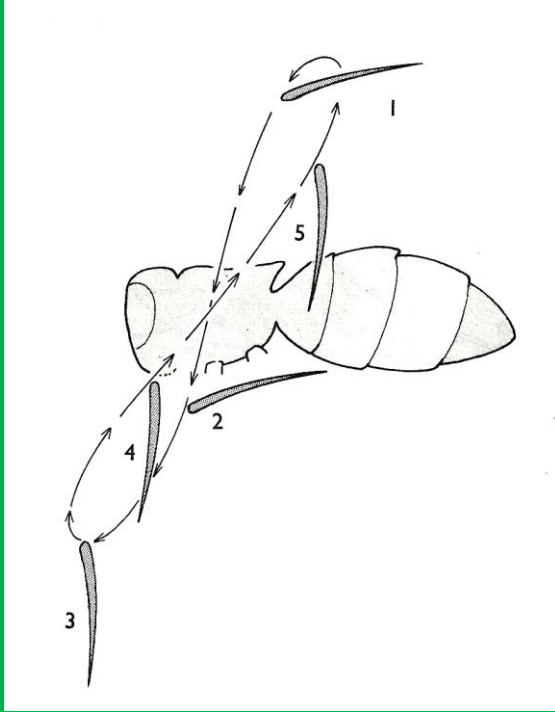


Fig. 3.4 Direct flight mechanisms: thorax during (a) upstroke and (b) downstroke of the wings. Indirect flight mechanisms: thorax during (c) upstroke and (d) downstroke of the wings. Stippled muscles are those contracting in each illustration. (After Blaney 1976.)



İndirekt uęma kasları ile uęma mekanizması

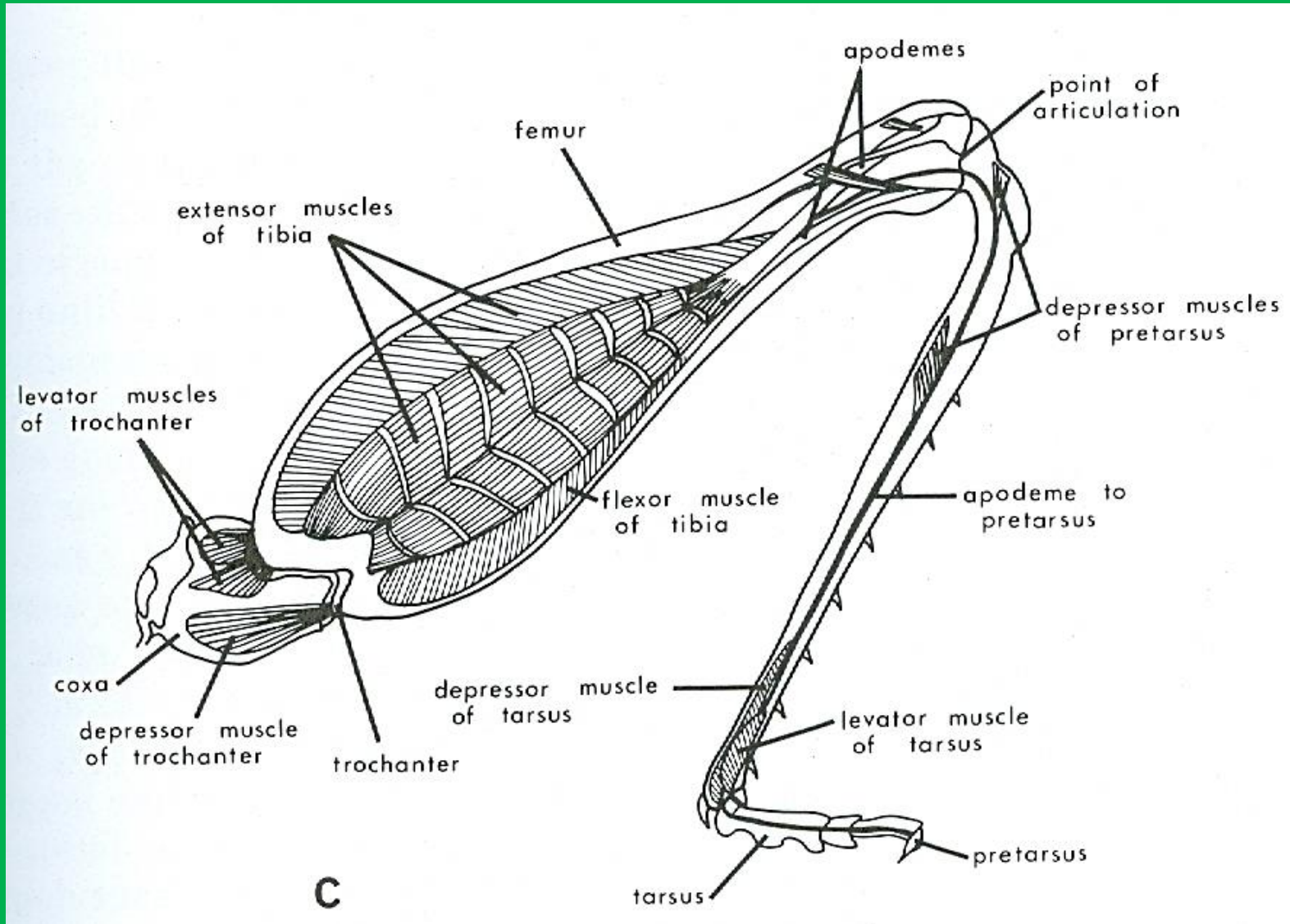
a kanatlar

b eklemler

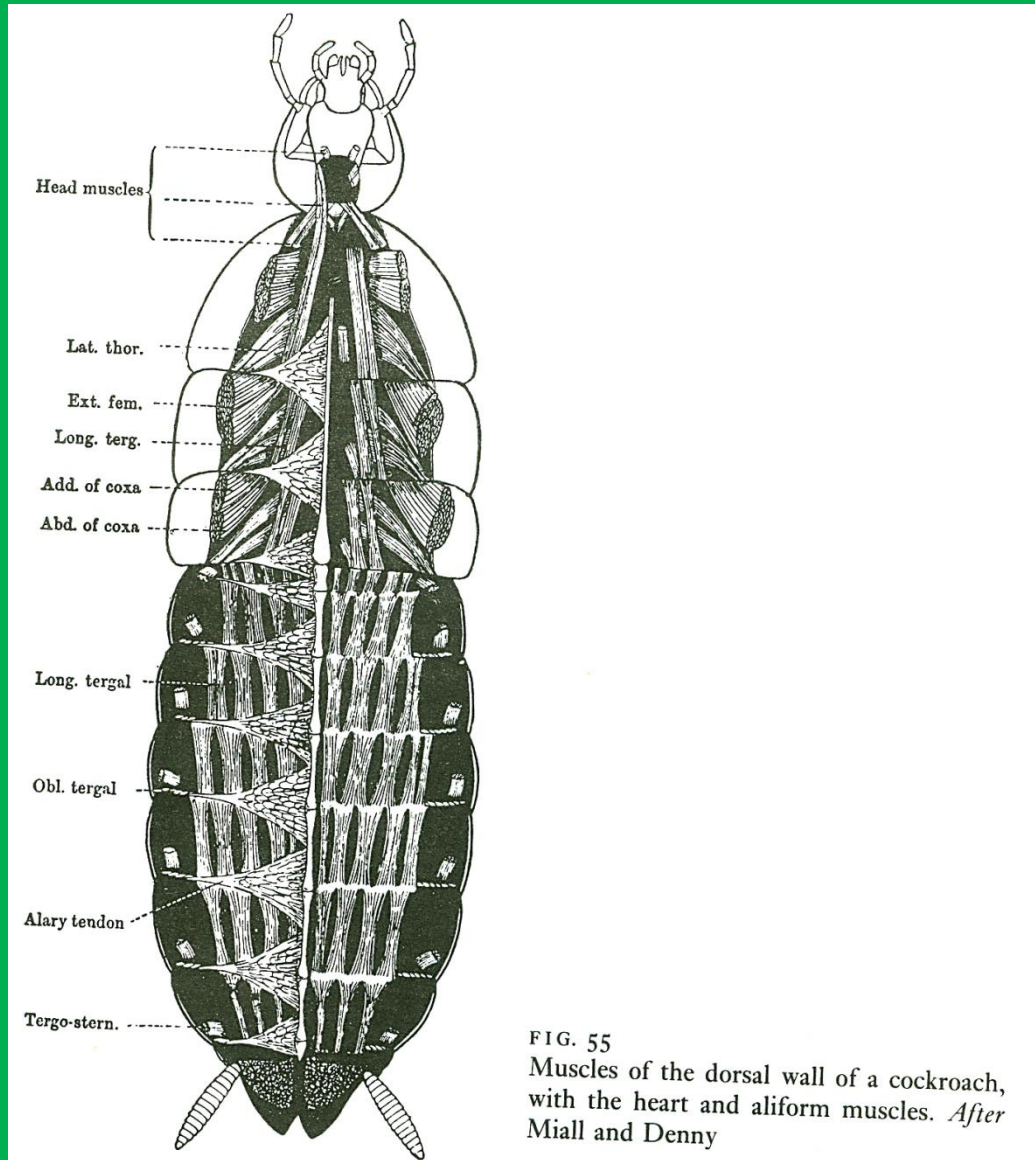
c dorsoventral kaslar

d longitudinal kaslar

Bacak kasları



Dorsal vücut duvarı kasları



Ventral vücut duvarı kasları

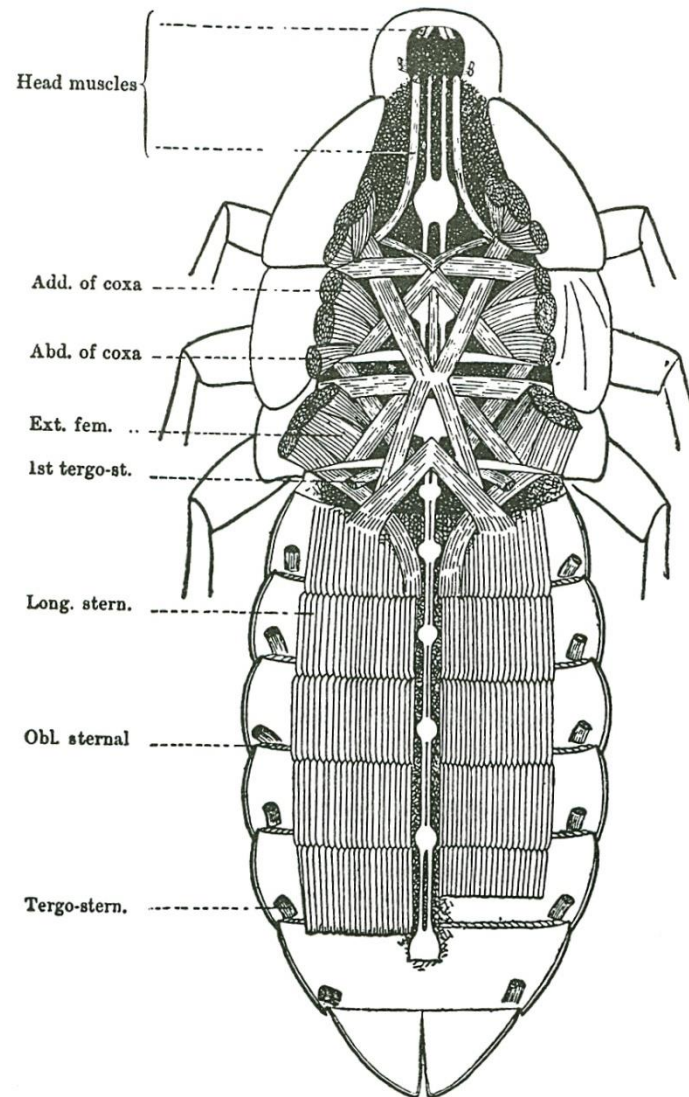


FIG. 58 Muscles of the ventral wall of a cockroach, with the nerve-cord. *After Miall and Denny*