

An electron microscopic study of the sheath enclosing the accessory reproductive glands of the male desert locust has shown that it consists, for the most part, of a single myofibril, and that other tissues (nerve fibres, tracheal elements, and the fat body) are also associated with it to a greater or lesser extent. The myofibril has special features associated with the Z-bands, including the regular infolding and the attachment of the sarcolemma at the Z-bands, and the synapsing of nerve axons at these infoldings, which perhaps facilitate the rapid transmission of nerve impulses into the myofibril. The distribution of the T-systems and sarcoplasmic reticulum (SR) is described, and their relationship to the speed of action of the myofibril is discussed.

The myofibril exhibits three distinct bands: the A-, I-, and Z-bands. In the A-band, each thick myofilament is surrounded by 10 to 12 thin filaments. This finding is related to similar findings in other arthropod visceral and slow-acting skeletal muscles.

The basement membrane surrounding the glandular epithelium comprises two parts: the inner part, which is structureless and contains neutral mucopolysaccharide; and the outer part which contains numerous collagen-like fibrils and stains for acid mucopolysaccharide. This characteristic is considered in relation to the insertion and function of the myofibril.