Trematodes

The class Trematoda of the phylum Platyhelminthes is divided into two orders, Monogenea and Digenea, each of which consists of obligate parasites. All of the trematodes of medical importance are classified within the order Digenea and include the blood flukes, the intestinal flukes, and the tissue flukes. They are mainly found throughout the tropics and subtropics and only rarely are encountered in the temperate zones.

Flukes of the order Digenea possess one of two reproductive styles. They are either 

*monoeious*, in which case the sexes are combined in single individuals, or *dioecious*, in which case the sexes are separate.

The outer surface of the adult worm consists of tegument, which serves as an absorbing surface for nutrients. It is covered by microvilli, underneath which there are mitochondria, pinocytoses, and other structures promoting absorption. Pinocytosis and active transport of low-molecular-weight nutrients enable the worm to be nourished by the digested foodstuffs in the small intestine of the host. In addition, the flukes have a functional gut, into which they ingest tissues of the host. The tegument covers several layers of muscles. These muscle layers are innervated by a pair of dorsal ganglia, which give rise to lateral peripheral nerves running the length of the body. Commissures from the lateral nerves innervate various organs, including the musculature, gut, and reproductive organs.

The gut originates at the oral cavity, which is enveloped by the anterior sucker. The ingested matter is pumped down into a bifurcated intestinal tract, which ends blindly. Digestion aided by enzymes, which include a variety of proteases, lipases, aminopeptidases, and esterases, takes place within this structure. The flukes have no body cavity; the organs are embedded in the parenchyma. Trematodes excrete solid wastes by reverse peristalsis in the gut tract and liquids by a network of tubules that connect collecting organelles, known as flame cells, with the excretory pore of the parasite.

Monoecious trematodes reproduce by self-fertilization or cross-fertilization. The eggs, supplied with yolk from the vitelline glands, are fertilized within the uterus and surrounded by a shell in the Mehlis’ gland. They must be shed into a suitable environment to continue the life cycle.

Dioecious trematodes, which include the blood flukes, live in copula as separate sexes. They produce eggs and fertilize them continuously.