TREMATODA : ASPIDOBOTHREA pdf

1: Rugogaster - Wikipedia

Acid phosphatase (EC) in Aspidogaster conchicola has been found by light microscopy in cells of the haptor, intestine, testis, and cirrus; and alkaline phosphatase (EC) in the haptor, body tegument, and tunica surrounding the testis.

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2: Foundations of Parasitology

Introduction. The Aspidogastrea is a small group of flukes comprising about 80 species. It belongs to the Trematoda, which comprises the two subclasses Aspidogastrea and Digenea.

Immunology and Pathology 4 Parasitic Prototoa: Form, Function, and Classification 5 Kinetoplasta: Malaria Organisms and Piroplasms 10 Phylum Ciliophora: Ciliated Protistan Parasites 11 Microsporida and Myxozoa: Parasites with Polar Filaments 12 The Mesozoa: Form, Function, and Classification of Digeneans 16 Digeneans: Plagiorchiformes and Opisthorchiformes 19 Monogenoidea 20 Cestoidea: Form, Function, and Classification 23 Nematodes: Trichinellida and Dioctophymatida, Enoplean Parasites 24 Nematodes: Tylenchina, Pioneering Parasites 25 Nematodes: Strongyloidea, Bursate Rhabditidans 26 Nematodes: Ascaridomorpha, Intestinal Large Roundworms 27 Nematodes: Oxyuridomorpha, Pinworms 28 Nematodes: Gnathostomatomorpha and Spiruromorpha, a Potpourri 29 Nematodes: Filaroidea, Filiarial Worms 30 Nematodes: Thorny-Headed Worms 33 Phylum Arthropoda: Hemiptera, Bugs 38 Parasitic Insects: Fleas, Order Siphonaptera 39 Parasitic Insects: Diptera, Flies 40 Parasitic Insects: Strepsiptera, Hymenoptera, and Others 41 Parasitic Arachnids: Subclass Acari, Ticks and Mites.

3: Trematode Field Guide: Overview â€“ Texas A&M Department of Biology

Rugogastridae is a family of trematodes in the order www.enganchecubano.com consists of a single genus, Rugogaster Schell, Species. Rugogaster callorhinci Amato & Pereira,

Klaus Rohde Multicotyle purvisi and Lobatostoma manteri are discussed as examples Rohde, , , further references therein. Pre-adult juveniles differ from adults in that only the latter produce sperm and egg cells. An oral sucker is lacking; the mouth opening is located anteriorly to the pharynx which opens into the single caecum. Two testes are found in the middle of the body and anteriorly to them an ovary. The vitellarium extends along both sides of the body and is confluent posteriorly. The uterus occupies much of the anterior half of the body. It opens, together with the sperm duct, close to the anterior end of the body. A septate oviduct is characteristic of all aspidogastreans which have been examined in this respect Fig. The female reproductive organs near the ovary of Multicotyle purvisi. Note the septate oviduct, indicated by the narrow lumen surrounded by a thick wall in the cross-section redrawn from Rohde, Adult Multicotyle purvisi redrawn from Rohde, In its anterior half, it is separated from the main body by a septum of connective tissue Fig. Sagittal longitudinal section along the midline of adult Multicotyle purvisi. Note the septum of connective tissue between the anterior ventral and dorsal parts of the body redrawn from Rohde, It is subdivided into four longitudinal rows of alveoli suckerlets. So-called marginal bodies are located between the marginal alveoli. Electron-microscopic studies of the marginal bodies of M. The secretion is transported in the ducts to the ampullae. Marginal organ of Lobatostoma manteri redrawn from Rohde, The ampullae open on the ventral surface through short ducts Figs. Marginal organs of Multicotyle purvisi showing marginal glands, ampullae and connecting ducts redrawn from Rohde, Nervous system The nervous system both of the larva and the adult is of extraordinary complexity Figs. Nervous system in anterior part of body. Note that the brain is the dorsal part of a ring commissure, and that there is a second more external ring commissure at the same level redrawn from Rohde, Main nerves in middle part of Multicotyle purvisi redrawn from Rohde, Whereas most flatworms have a ladder system of nerves consisting of a number of longitudinal nerve cords connectives below the surface epidermis or tegument connected by ring commissures, both the larva and the adult of Multicotyle purvisi have two such systems in the anterior part of the body, one below the surface and one surrounding the mouth cavity. Furthermore, the number of connectives is very large, i. The latter observation may have important phylogenetic implications, it may indicate that the brain in the Platyhelminthes and perhaps in all invertebrates has evolved as a processing centre in the interior of the body and not, as usually assumed, as an aggregation of nerve cells around anterior sensory receptors. Some branches of these connectives enter the ventral disc of the adult or posterior sucker of the larva, and other branches enter the pharynx of the adult and larva. Intestine and septum dorsal to the ventral disc are also well innervated. Anteriorly and posteriorly, the longitudinal nerves are connected by well developed commissures. Of particular importance, parts of posterior nerves were found to be surrounded by a multilamellate sheath, one of the few instances of glial elements in the nervous system of flatworms. Clusters of glandular, apparently neurosecretory cells were shown to occur at the junctions of connectives and commissures dorsal and lateral to the ventral disc. Sensory receptors Electron microscopic studies of Lobatostoma manteri and Multicotyle purvisi have shown an amazing variety of sensory receptors, which differ in the absence or presence of cilia, in the shape and length of the cilia, in the absence or presence of ciliary rootlets and their shape, in the number of axonemal microtubules, and whether they are part of a complex organ or not. In pre-adults of the first species, eight and possibly a further six types, in adults of the second species seven and possibly a further two types were found Fig. Sensory receptors of pre-adult Lobatostoma manteri. Note differences in presence or absence of a cilium or a ciliary rootlet, length of cilium, shape of ciliary rootlet, presence or absence of tubules, location in the tegument redrawn from Rohde, a. It has been estimated that pre-adult L. Ultrastructure of the integument of Aspidogaster conchicola. Journal of Parasitology 57, The ultrastructure of spermatozoa of Aspidogaster conchicola Baer, Aspidogastridae, Trematoda. Netherlands Journal of Zoology 23, The structure of the opisthaptor of Aspidogaster conchicola Baer, Aspidogastridae, Trematoda. Netherlands

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4: Trematodes - Encyclopedia of Arkansas

Eukaryotic organisms, especially trematodes, mites, and Conchophthirus spp. (Ciliata) are common inhabitants of unionids, and some have the potential to decrease the fitness of the host unionid.

Emphasizes principles with related information on the biology, physiology, morphology, and ecology of the major parasites of humans and domestic animals. This is not a diagnostic manual for medical students. Immunology and Pathology 4 Parasitic Prototoa: Form, Function, and Classification 5 Kinetoplasta: Malaria Organisms and Piroplasms 10 Phylum Ciliophora: Ciliated Protistan Parasites 11 Microsporida and Myxozoa: Parasites with Polar Filaments 12 The Mesozoa: Form, Function, and Classification of Digeneans 16 Digeneans: Plagiorchiformes and Opisthorchiformes 19 Monogenoidea 20 Cestoidea: Form, Function, and Classification 23 Nematodes: Trichinellida and Dioctophymatida, Enoplean Parasites 24 Nematodes: Tylenchina, Pioneering Parasites 25 Nematodes: Strongyloidea, Bursate Rhabditidans 26 Nematodes: Ascaridomorpha, Intestinal Large Roundworms 27 Nematodes: Oxyuridomorpha, Pinworms 28 Nematodes: Gnathostomatomorpha and Spiruromorpha, a Potpourri 29 Nematodes: Filaroidea, Filiarial Worms 30 Nematodes: Thorny-Headed Worms 33 Phylum Arthropoda: Hemiptera, Bugs 38 Parasitic Insects: Fleas, Order Siphonaptera 39 Parasitic Insects: Diptera, Flies 40 Parasitic Insects: Strepsiptera, Hymenoptera, and Others 41 Parasitic Arachnids: Student learning outcomes are provided for each chapter, which can be used by instructors for assessment. Updated Chapter Content including but not limited to: New Content is Chapter 2 covering fascinating material on the role played by parasites in food webs and ecosystems Chapter 3 has been rewritten, reorganized, and expanded, now including a section introducing antimicrobial peptides defensins and Toll-like receptors and tables listing the many ways that protozoan and helminth parasites evade host defenses. The discussion of Treg and dendritic cells has also been expanded as well as a section added on the microbial deprivation hypothesis relating parasitism to immune system development. This text continues to be the only text on the market that includes information on the latest findings and research on Nematomorpha in Chapter A detailed listing of updates to this text can be found in the Preface. Retained Features Flexible Organization The first three chapters delineate important definitions and principles in evolution, ecology, immunology, and pathology of parasites and parasitic infections. Chapters on specific groups follow, beginning with protozoa and ending with arthropods. Presentation of each group is not predicated on students having first studied groups presented in prior chapters; therefore, the order can vary as an instructor desires. Study Aids guide students to a clear understanding of the topics Essential terms, many of which are defined in a complete glossary, are boldfaced in the text to provide emphasis and ease in reviewing. In response to student requests, we again provide pronunciation guides for glossary entries. Numbered references at the end of each chapter make supporting data and further study easily accessible. Clear labeling makes all illustrations approachable and self-explanatory to the student.

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5: McGraw-Hill Education Canada Highereducation

Read "Phylogenetic systematic assessment of the Aspidobothrea (Platyhelminthes, Neodermata, Trematoda), Zoologica Scripta" on DeepDyve, the largest online rental service for scholarly research with thousands of academic publications available at your fingertips.

Flukes Trematodes flukes include parasitic flatworms belonging to the phylum Platyhelminthes, class Trematoda, and subclasses Aspidogastrea two orders, four families and Digenea ten orders, more than seventy-two families. The class numbers between 18, and 24, species; they are found primarily in a variety of animals, including humans and other vertebrates. Modern phylogenetic analysis reveals that the worms of class Monogenoidea monogenetic flukes are no longer included within the Trematoda and are more closely related to tapeworms. The modern mobility of human beings, combined with the international transportation of animals and foodstuffs that can be infected, means that diagnoses can occur well outside the areas where trematode species are endemic. However, while trematodes do occur in Arkansas, they do not pose a great health risk, as they primarily occur in species of animals not commonly eaten by humans. One small group of trematodes belongs to the subclass Aspidogastrea sometimes referred to as Aspidobothrea , which includes about eighty species. They are parasites of mollusks but can also infect fishes including both teleost and cartilaginous species and turtles. Species range in length from less than one millimeter to over several centimeters. Aspidogastreans have a less complex life cycle than their digenean relatives, and reproduction results in only one egg. In others, such as Austramphilina elongata from the long-necked turtle Chelodina longicollis in southeastern Australia, they hatch in the water and the larvae swim around until they are able to infect a suitable, or sometimes unsuitable, host. In some speciesâ€"such as Aspidogaster conchicola from freshwater mussels and Lobatostoma manteri from the snubnosed dart Trachinotus blochi of the Great Barrier Reefâ€"the eggs are not laid until the larvae are nearly ready to hatch. These larvae can be either ciliated having hairlike projections , in which case they normally have two rings of cilia i. In the intermediate host, the larvae grow a certain amount and then wait until the intermediate host is eaten by the primary host. Interestingly, aspidogastreans may survive for many days or perhaps even weeks outside a host in water or saline solution. They further propose that the complex life cycles of digenean trematodes have evolved from the unsophisticated ones of aspidogastreans. However, because none of these aspidogastreans have medical or economic importance, they attract little attention compared to the Digenea. The more common flukes of the subclass Digenea are mostly dorsoventrally flattened flattened on the top and bottom surfaces and possess a muscular oral sucker that surrounds the mouth. In addition, most also possess a midventral or posterior acetabulum ventral sucker used for locomotion and attachment to a host. The digestive tract normally consists of a short esophagus often surrounded by a muscular pharynx , which then often but not always splits into a pair of blind intestinal cecae. Generally, host tissues are drawn into the oral sucker and are then digested by the strong pumping action of the pharynx. However, in the schistosomes Schistosoma spp. Most trematodes are hermaphroditic having reproductive organs associated with both male and female sexes , except the schistosomes, and many trematodes self-fertilize. The male reproductive system usually consists of two testes range from one to several hundred , each of which may have a vas efferens that connects to form a common duct, the vas deferens. The vas deferens leads to the genital pore, which usually has associated structures such as an internal seminal receptacle for sperm storage, a prostate gland that may add secretions to the sperm, and a cirrus pouch in some, the so-called male copulatory organ. The female reproductive system is more complicated and consists of a single ovary, an oviduct, a seminal receptacle in some for sperm storage, vitelline glands along the lateral margins of the body that provide material for egg shell formation, and a series of glandular structures that aid in egg shell maturation e. Females may also have a uterus which may be filled with eggs, and perhaps a modification of the end of the uterus called a metraterm. The body of a fluke is covered by a living layer of cells called a tegument, which functions in nutrient absorption. Thus, flukes can digest and absorb nutrients not only across the gut wall but also across the outer body. Ornamentation, such as cuticular spines, papillae, or tubercles, is often present along the tegument and can often be seen by using simple light microscopy. Flukes can be loosely categorized six ways based on the location of suckers. The following are examples: The life cycle of a digenean trematode is indirect and often involves two or more hosts. However, there is a species opecoelidae fluke in the genus Plagioporus that matures in snails. Eggs of most species are operculate with a lid , except the schistosomes, and laid either embryonated or unembryonated with or without an embryo. The eggs of some species hatch in water, while those of others require ingestion by the appropriate intermediate host. Once the egg hatches, however, a ciliated larva called a miracidium emerges and penetrates the tissue of the intermediate host usually a snail or clam with anterior penetration glands. Depending upon the species, the miracidium may develop into a sporocyst an asexual reproductive structure without mouth or intestine that may give rise to daughter sporocysts, rediae, or cercariae or redia an asexual reproductive structure with mouth and gut that may give rise to daughter rediae or cercariae. Whichever phases of asexual development a species possesses, the final outcome of asexual multiplication is tailed cercariae in some, which aid them in swimming; however, some have rudimentary tails or none at all. Depending upon the species, these sexually immature juvenile forms may do one of several things. Some species encyst on vegetation as metacercariae and remain dormant until eaten by an appropriate host. Some penetrate the skin or muscle tissue of an animal especially fishes and remain dormant as metacercariae until the fish is eaten by the final definitive host. Others may penetrate the skin of the definitive host directly such as the schistosomes, thus forming no metacercaria. Once inside the final vertebrate host, the cercaria casts off its tail, migrates to its target organ s , and finally matures into an adult worm. One interesting digenean belonging to the genus Halipegus is found in frogs and has two different hosts involving several generations. Mollusks, copepods, ostracods, or dragonfly nymphs are typically the first intermediate hosts, whereas frogs can be second intermediate or definitive hosts. This parasite possesses a non-encysted metacercariae. Embryonated eggs are passed in the feces of the frog, hatch when eaten by a snail, and develop into cercariae, which are swallowed by copepods. The infected cyclopoid copepods are swallowed by tadpoles. The worms remain in the mesenteries until the frog metamorphosizes, at which time the parasite migrates up to the esophagus into the eustachian tubes. A number of medically important digenean flukes are found in humans and other animals. One is Dicrocoelium dendriticum that lives in the bile ducts of mammals , especially cattle and deer, and is distributed in Europe and, following its introduction, portions of the northeastern United States. Humans are considered only accidental hosts. The salmon fever fluke, Nanophyetus salmincola, which lives in the intestine of many mammals, occurs along the northwestern coast of North America and Siberia. This species is known to infect over thirty different species of fish-eating mammals and occurs in the crypts glands of the small intestine of canids, felids, mustelids, bears, and humans; some birds may also harbor adult worms. This worm has been reported in North America on at least ten occasions, and a similar species, N. One common species in this group is Metagonimus yokagawi of fish-eating mammals in the Far East, the former Soviet Union, and the Balkans. Patients infected with M. Prognosis is usually good, except in cases of embolization blocked blood vessels. Another heterophyid species, Heterophyes heterophyes, is a small fluke first discovered as a human infection in Cairo, Egypt, in If eggs enter the bloodstream, patients can develop heterophyid myocarditis, reported in fifteen percent of patients with cardiac failure in the Philippines. In addition, eggs in the brain or spinal cord can lead to neurological disorders that are sometimes fatal. Another group, schistosomes, consists of slender and elongate, blood-vascular worms, with separate sexes and very anterior suckers. These worms cause the serious human disease known since antiquity as schistosomiasis. The female worm lies within the gynecophoral longitudinal groove canal in the ventral surface of the male. Schistosomes are responsible for million human infections and up to , deaths per year. Schistosoma haematobium lives principally in veins of the urinary bladder plexus of people from India, the Middle East, and Africa, and the pathogenesis is almost entirely due to the eggs and not the adult worms. In chronic disease, eggs become trapped in the bladder wall, resulting in the formation of granulomata. Following prolonged infection, the ureters may become obstructed and the bladder may become thickened, resulting in abnormal urinary function, urinary infection, and damage to the kidneys. These flukes are capable of causing considerable damage to their host as they migrate through the liver tissue, or by blocking bile ducts. The giant intestinal fluke, Fasciolopsis buski, is the most common human intestinal trematode, an elongate and oval species reaching lengths of twenty to seventy-five millimeters and widths up to twenty millimeters; it infects the small intestine of swine and humans in Asia. In , there were an estimated ten million human infections, and the number is likely greater today. Heavy infections can block the passage of food and interfere with normal digestive functions, and long-term infections can lead to ulceration, hemorrhage, intestinal abscesses, and death. The Chinese liver fluke, Clonorchis sinensis, infects the bile duct of a variety of fish- eating mammals, including humans, swine, canids, felids, rodents, lagomorphs, and camelids in Asia and southeast Asia. Infection outside the natural range of C. In New York City, for example, prevalence of infection with clonorchiasis was twenty-six percent among immigrant Chinese. The first intermediate host is a variety of snail species most common is Parafossarulus manchouricus where sporocyst and redial generations occur. The metacercariae develop within the musculature of a variety of fish as second intermediate hosts, predominately cyprinid fishes, including grass carp Ctenopharyngodon idella , considered a Cantonese delicacy. In birds, the oviduct fluke, Prosthogonimus macrorchis, is found in the oviducts, bursa of Fabricus, intestine, and cloaca of North American anseriform, galliform, and passeriform birds. The first intermediate host is snails of the genus Amnicola, and metacercariae develop within dragonfly nymphs after being pulled into their rectal branchial chamber. In North America, the prevalence of P. The first intermediate is the snail, Pomatiopsis lapidaria, and metacercariae encyst on the viscera, especially the heart muscle, of the second intermediate hosts: These flukes cause an inflammation in the lungs and connective tissue proliferation. In addition, many worms migrate to sites other than the lungs and can cause serious medical problems. In Arkansas, several digenean trematodes are commonly encountered in various vertebrates when necropsied examined after death. Adult Posthodiplostomum minimum occur especially in the small intestine of fish-eating birds in the orders Ciconiiformes wading birds and Charadriiformes shorebirds and a wide range of other birds, mammals, and even reptiles and amphibians. Another relatively common digenean trematode found in both game and non-game Arkansas fishes statewide are several species of strigeoids that cause black spots in the skin. These include species of Neascus and Uvulifer ambloplitis. The host fish responds to the neascus metacercariae in its skin by deposition of melanin pigment. The result is a conspicuous black spot sometimes many spots indicating presence of the infection, and when the definitive host likely a kingfisher ingests a host fish, the definitive host becomes infected with a fluke that matures in about a month. Other common Arkansas digeneans include the clinostomes primarily Clinostomum marginatum , the adult of which resides in the mouth and esophagus of reptiles and, especially, fish-eating birds e. Eggs are passed into water with the feces, and the miracidia penetrate planorbid snails. Sporocyst and redial generations occur, resulting in the production of cercariae that encyst as metacercariae throughout the body of second intermediate hosts such as fishes and amphibians salamanders, frogs, and toads. Clinostomes are very common in amphibians, fish, and fish-eating birds in Arkansas, and a great deal of research has been done on Clinostomum spp. Interestingly, some of the largest populations of clinostomes are in smallmouth bass Micropterus dolomieu of Crooked Creek in Marion County. Although much has been reported on the trematode parasites of game fishes of the state, recent research reveals the incredible diversity of trematodes found in non-game fishes of Arkansas. Several new species have been discovered, including those in the genera Alloglossidium, Crepidostomum, Creptotrema, Homalometron, Lissorchis, and Plagioporus. Biologists using both morphometric quantitative analysis of form and molecular techniques will likely add to the growing knowledge of the trematodes of Arkansas and beyond. The Parasites of Homo sapiens. Parasites of North American Freshwater Fishes.

6: Rugogastridae - Wikispecies

The aspidogastrea (or aspidobothrea), which can be distinguished by a single large ventral sucker, contain roughly 80 species that parasitize freshwater and marine molluscs, fish, and turtles. The digenea incorporate the remainder of the trematode species and can be identified by the presence of two suckers, one located near the mouth (oral.

How To Use This Resource Our goal in making this website was to create an electronic field guide with which to identify trematodes as well as provide additional species-specific information. The available resources were thus developed for use by scientists and non-scientists alike in the hopes of inspiring laypeople especially amateur naturalists and teachers to look for trematodes in their own backyards. The Trematode Field Guide can be split into three main parts: The Species tab, which includes a list of the current species represented on the site and is searchable by both host and parasite name. Each individual species page includes information on identifying features, hosts infected, life cycle pattern if known and images. The Resource tab, which provides helpful tools for teachers to incorporate trematodes into their curriculum, distribution maps of known sites of Alloglossidium spp. The Links page, which provides links to external databases that are useful for general parasite identification as well as further information about host species. Return to Top What Are Trematodes? Typically a few centimeters in length although size can vary greatly , trematodes can be recognized by a flattened-oval shape. The Trematoda, which is comprised of approximately 18, species, can be further split into two groups sub-classes. The aspidogastrea or aspidobothrea , which can be distinguished by a single large ventral sucker, contain roughly 80 species that parasitize freshwater and marine molluscs, fish, and turtles. The digenea incorporate the remainder of the trematode species and can be identified by the presence of two suckers, one located near the mouth oral sucker and one on the underside of the fluke ventral sucker. The digenea also infect a wider variety of invertebrate â€" including molluscan, crustacean, and leech hosts â€" as well as vertebrate organisms. Trematodes can also be classified based on the system they infect within their vertebrate host or even the environment in which their host is found. For instance, tissue flukes inhabit biological tissues including organs, muscle tissue, and the digestive tract. Blood flukes, on the other hand, infect the blood of their host at some stage during their life cycle. Typically trematodes are hermaphroditic having both male and female organs and are able to alternate between sexual and asexual reproduction â€" although some exceptions do exist the aspidogastrea only reproduce sexually while the digenean schistosomes have separate sexes. For many trematodes, sexual reproduction occurs in the final, or definitive, vertebrate host. Eggs, having been shed along with feces, release free-swimming larva that can infect a first intermediate molluscan host. While inhabiting the mollusc, asexual reproduction increases parasite numbers and thus the likelihood of infecting the next link in the cycle. Individuals can then be passed onto the next intermediate host via ingestion predator eating infected prey or penetration. The aspidogastrean life cycle is notably different from that of the digeneans in that there are no multiplicative larval stages; rather, many aspidogastreans incorporate a direct life cycle in molluscs with only those species parasitizing vertebrates requiring an intermediate host. The digenean life cycle is more complex, typically incorporating 3-hosts including a vertebrate final host and asexual reproduction during larval stages. However, there are always exceptions to the rule. For instance, a number of life cycle patterns are utilized by species in the genus Alloglossidium includng a traditional 3-host life cycle as well as truncated 2-host life cycles whereby the parasite reaches sexual maturity in an invertebrate host. For more information, including life cycle diagrams, browse our tools for teachers section. Although parasitism is one of the most common lifestyles among eukaryotic organisms, there remains a significant amount of undescribed parasite biodiversity. Additionally, trematode biodiversity is represented by variation in natural history including complexity of life cycles and geographic distributions. By striving to answer the deficiencies in our current understanding of trematode diversity we can gain better insight into ecosystem processes as well as environmental health and allow us to better address economic and public health concerns. Furthermore, by creating a more complete picture of trematode species, we begin to use more parasite systems as evolutionary models to address patterns of diversification. Any opinions, findings, and conclusions or recommendations expressed in this material are

those of the author s and do not necessarily reflect the views of the National Science Foundation.

7: Juvenile & Adult Aspidogastrea

Biology of aspidobothrian trematodes by to the Digenea, and assigned them to the order Aspidobothrea under subclass Malacobothria. Price (), in agreement.

TREMATODA : ASPIDOBOTHREA pdf

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