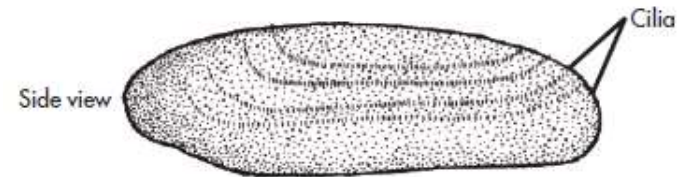
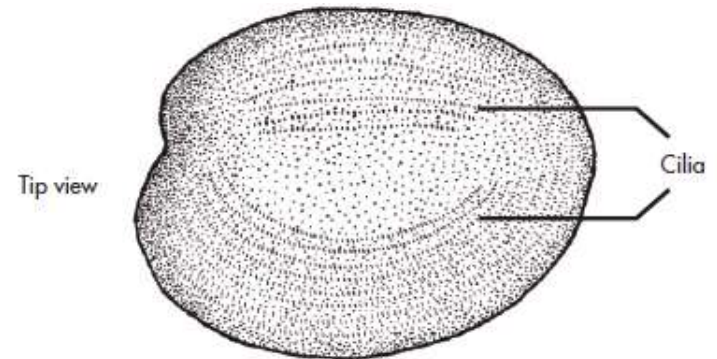
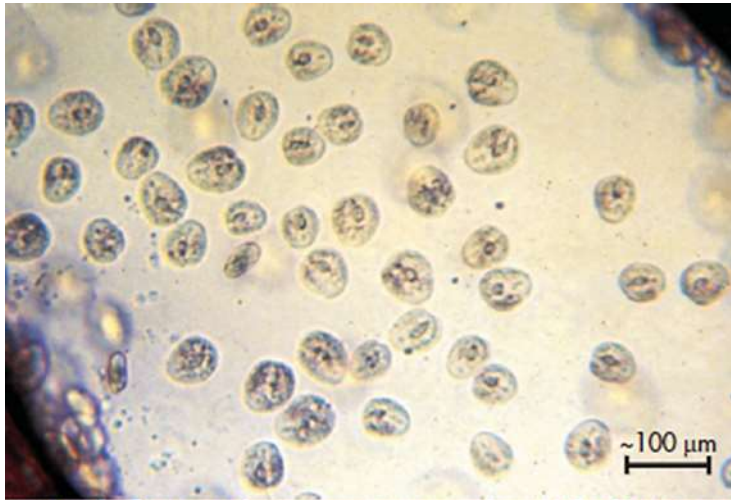


Chilodonellosis

Morphology:

- Leaf-shaped ciliated protozoans
- oval
- dorsoventrally flattened
- slightly asymmetric
- Mobiles
- 40-60 μm

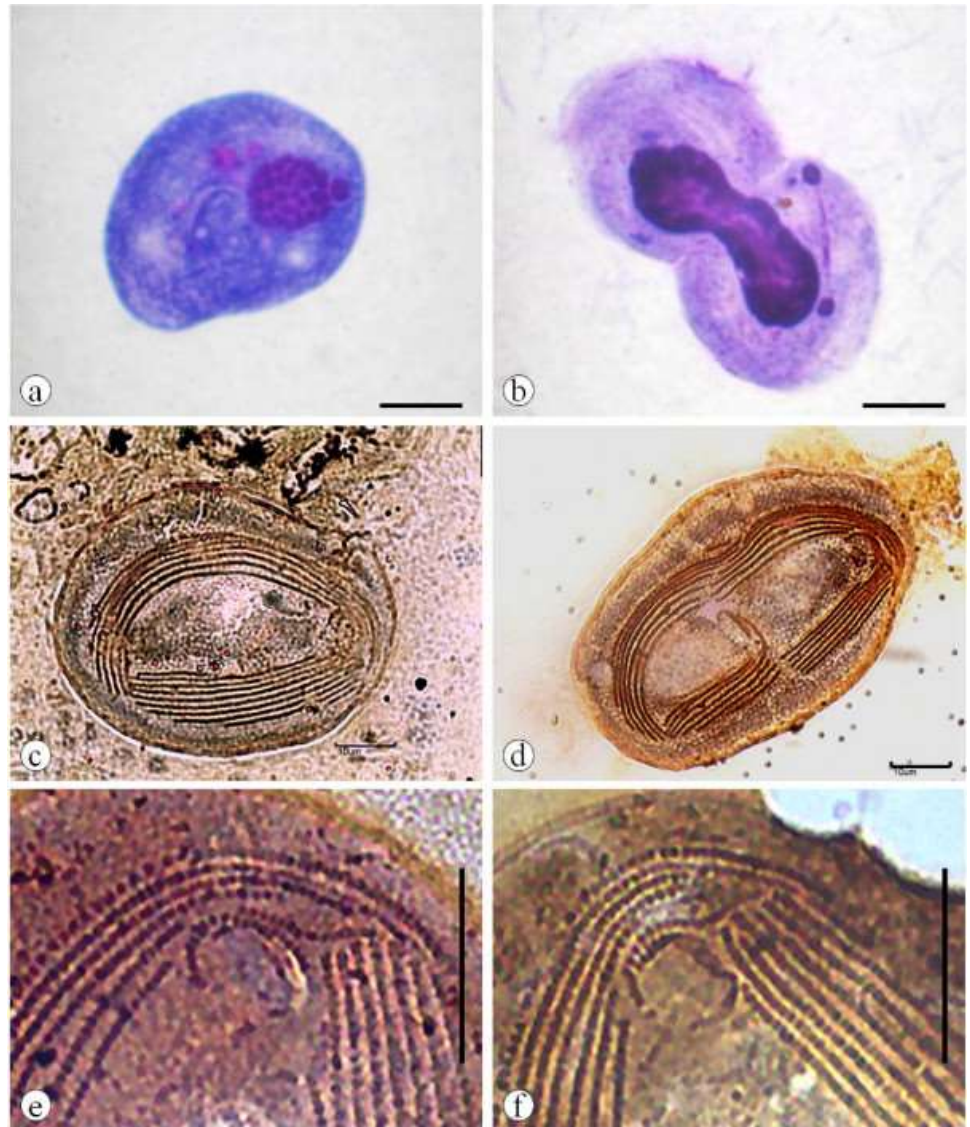


Life cycle

- monoxen life cycle with transversal division
- sexual reproduction by conjugation



- Giemsa-stained *Chilodonella hexasticha* reveals a nuclear apparatus (a–b) and binary fission (b). The kineties (c–f) and binary fission (d) can be observed in the silver nitrate-impregnated specimens. High magnification photomicrography of the oral ciliature (e–f). Bar: 10 μm



Epidemiology:

- Only two species have been observed causing damage in fish:
 - *C. hexastica*
 - *C. piscicola* (c.cyprini)
- parasitize of the skin, gills and fins of freshwater
- wide temperature tolerance

Pathogenesis :

- *Chilodonella* elicits a strong cellular response, which suggests that it may feed directly on epithelium. It appears to feed by penetrating the host cells with its cytostome and sucking out the contents
- the disease is frequently accompanied by bacterial opportunistic secondary infections that provoke systemic infection and host death

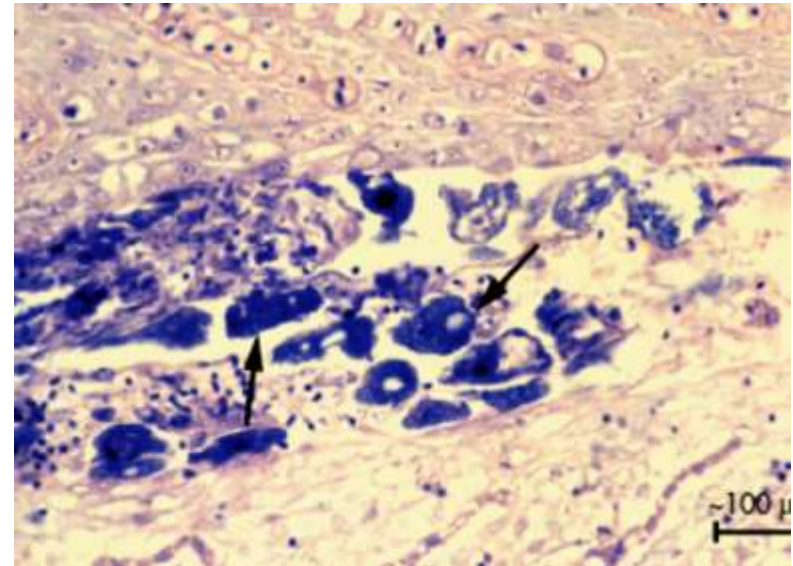
clinical signs:

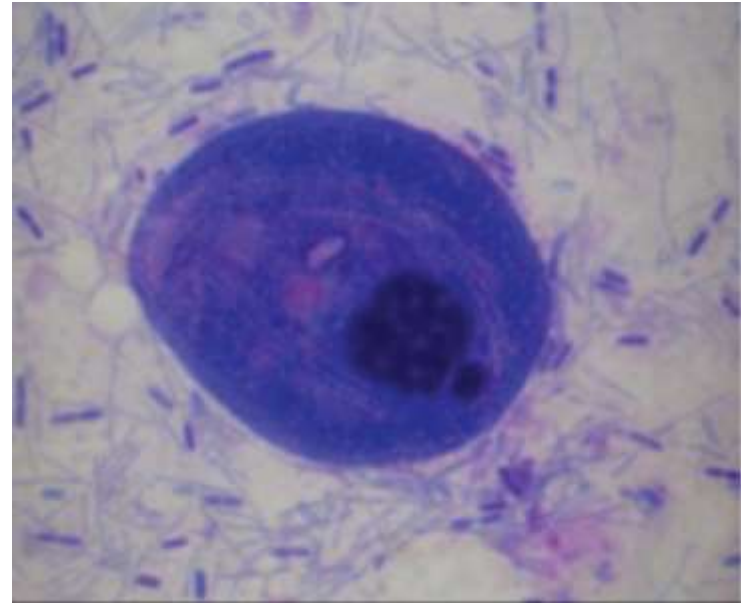
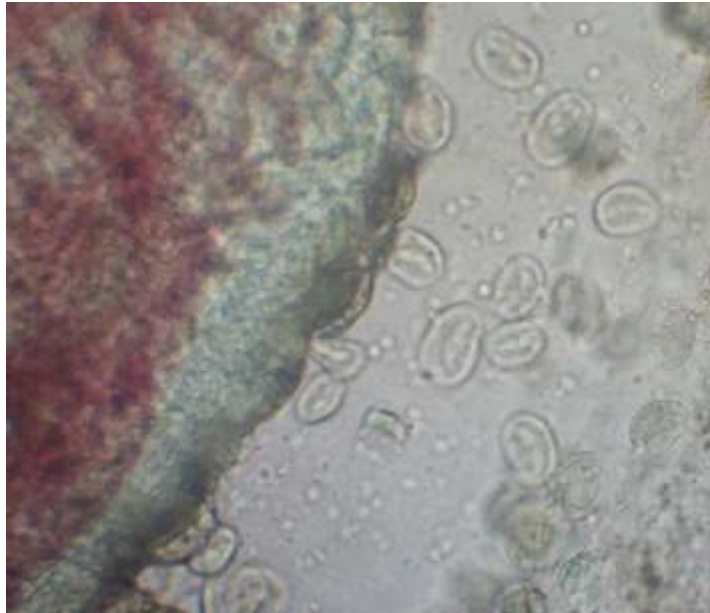
- respiratory difficulty, loss of equilibrium and appetite.
- whitish lesions on the gills, scaleness, skin and fins ulcers, and haemorrhagic areas
- In acute cases, an increase in the mucus production with consequent congestion of the gills



Diagnosis:

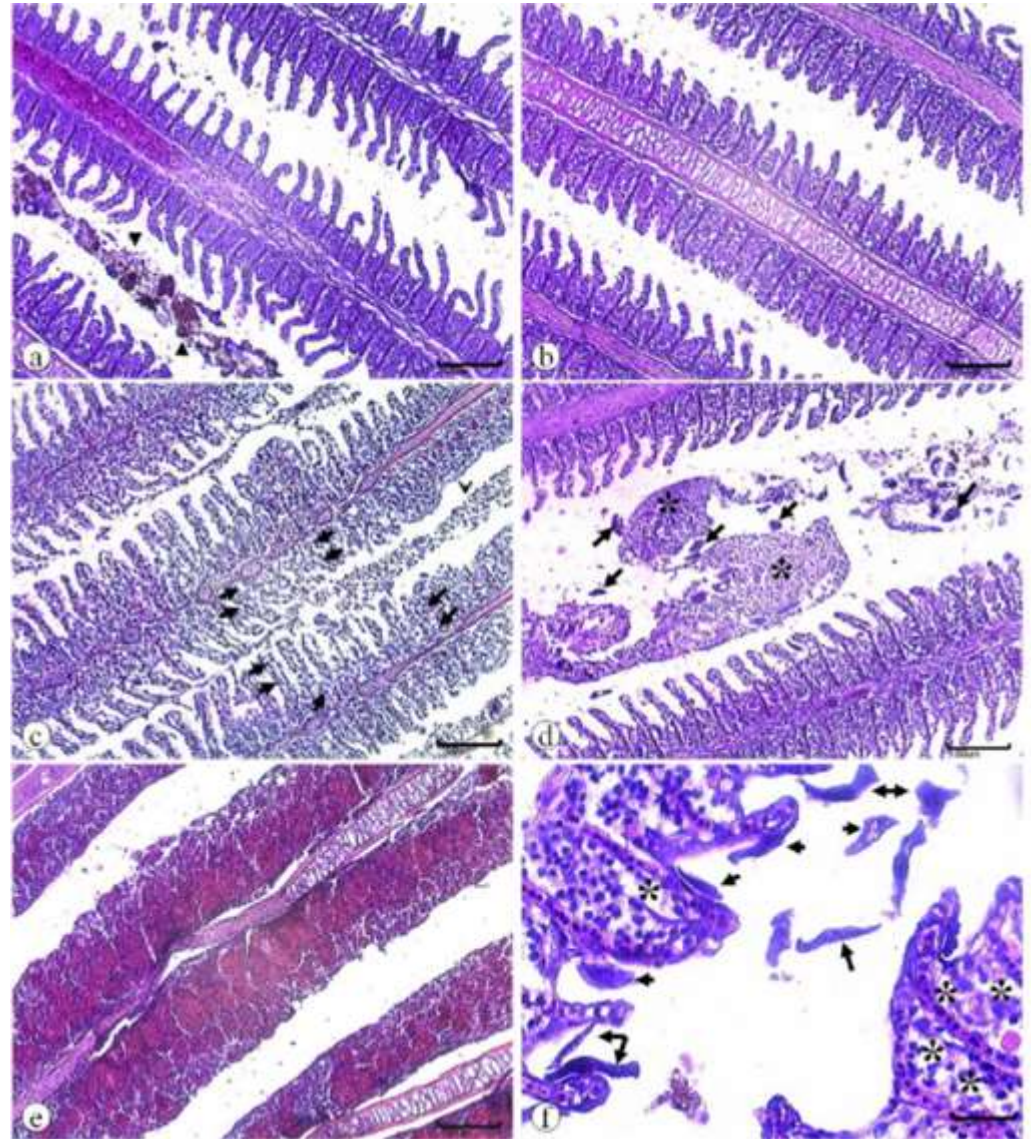
- 1. Wet mount of skin or gills with parasite
- 2. Histopathology of skin or gills with parasite





- *Chilodonella hexasticha* observed in fresh-mounted slide from the gills of Nile tilapia *Oreochromis niloticus*
- nuclear apparatus and great amount of bacteria when stained by Giemsa

- The histopathology of pacu (*Piaractus mesopotamicus*) gills that are parasitized by *Chilodonella hexasticha*. Epithelial hyperplasia (a–f), lamellar fusion (b–f), necrosis (c – arrows; f – asterisk), cellular desquamation (d – asterisk), interstitial hemorrhage (e), and chilodonellids (d and f – arrows).



Treatment

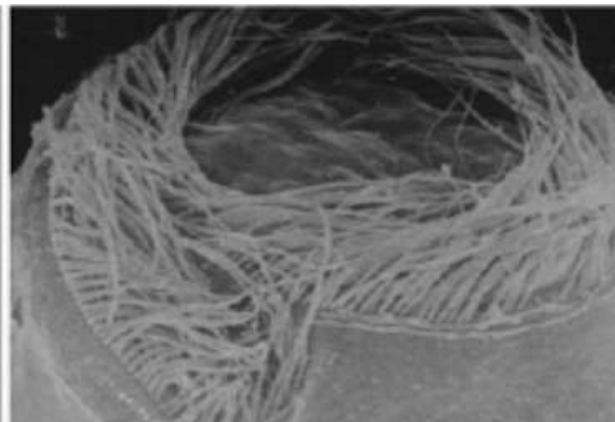
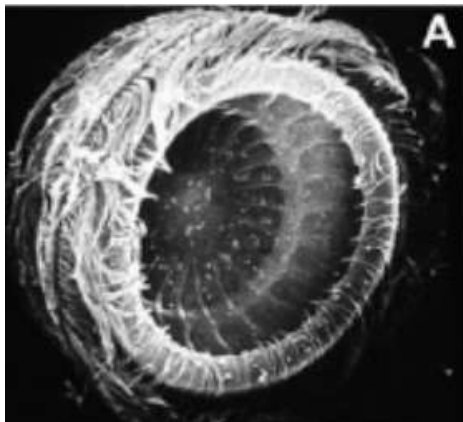
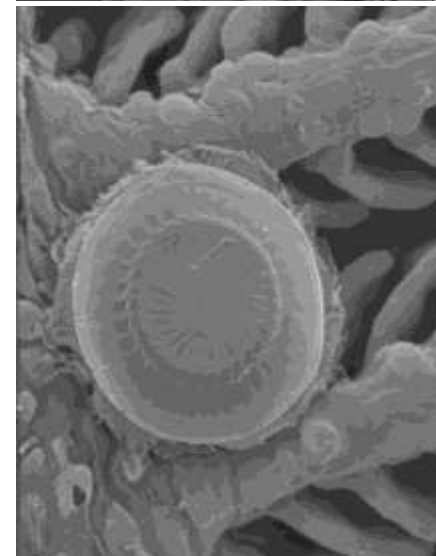
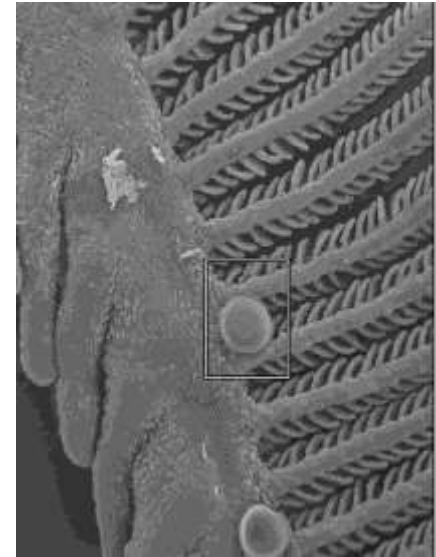
- Formalin bath
- Potassium permanganate prolonged immersion
- Acetic acid bath
- Salt bath
- Copper prolonged immersion

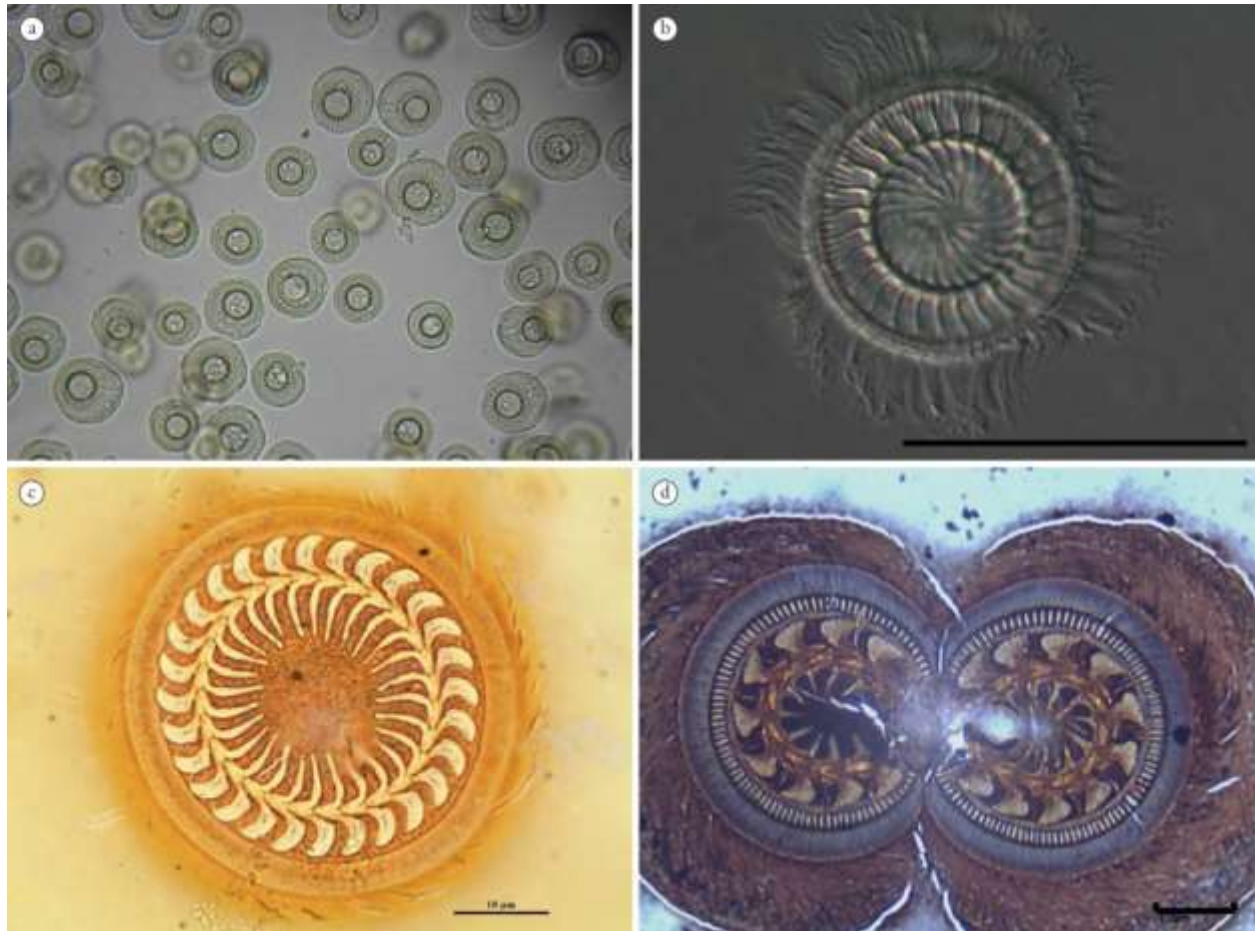
Trichodinosis



Casutiv agent:

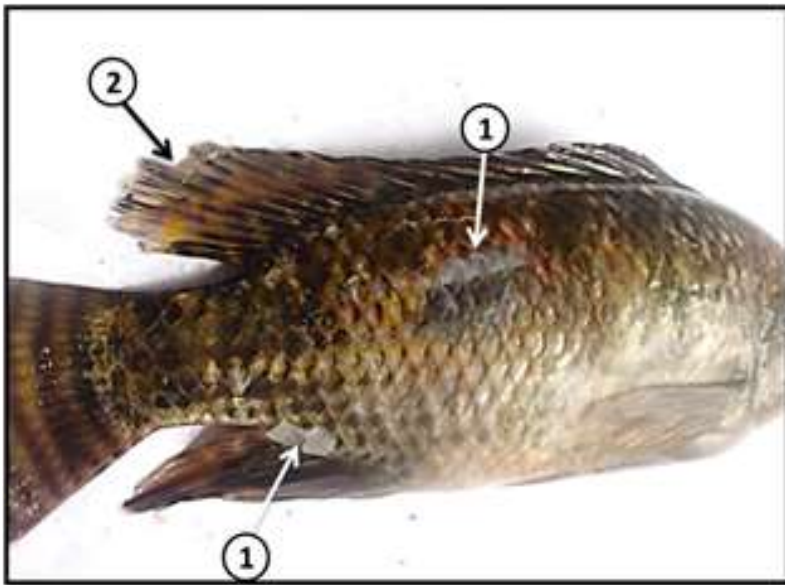
- semispherical
- attaches on the fish host by the denticles at the central part of the adhesive disc and the marginal cilium.
- freshwater and marine fishes parasite on the body surface
- endoparasites in the intestine, kidney and urinary bladder
- feeds on bacteria and detritus particles from the fish surface
- Well-known species: *Trichodina reticulata* (common carp and goldfish) *T. truttae* (salmonids)





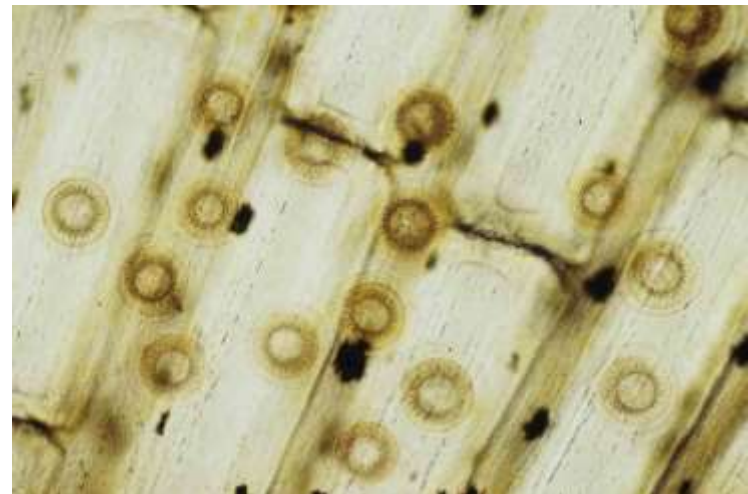
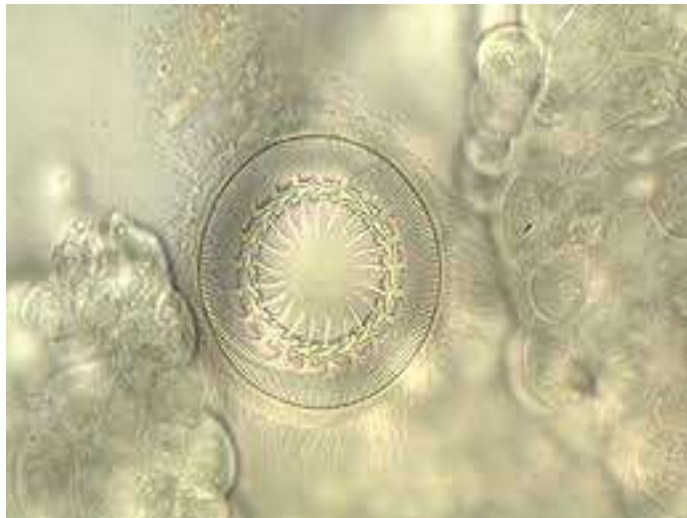
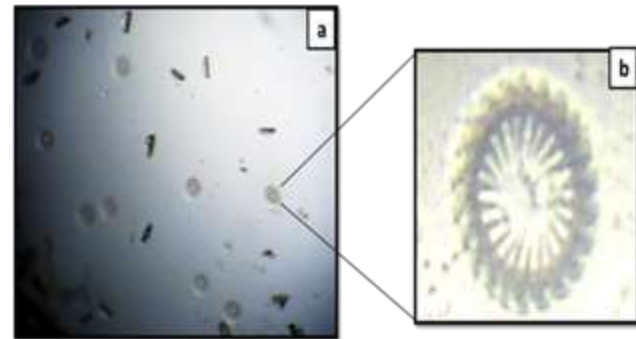
Trichodinids in fresh-mounted smear from the skin (a), *Trichodina centrostrigeata* in differential interference contrast microscope (b), adhesive disc of *Trichodina magna* in silver nitrate impregnation (c) and an adhesive disc of a trichodinid during binary fission in silver nitrate impregnation (d). Bar: 50 μm (b) and 10 μm (c,d).

- Life cycle: monoxenic life cycle and reproduce mainly by binary fission (conjugation is also possible)
- Clinical signs: flashing, increased mucus production (cloudy appearance), cutaneous hemorrhages, frayed fins and tail, lethargy, and chronic low level mortalities, respiratory signs may be present. Secondary bacterial and fungal infections may occur



diagnosis

- In fresh wet-mounted material:the parasites move rapidly in circle.
- Histological sections



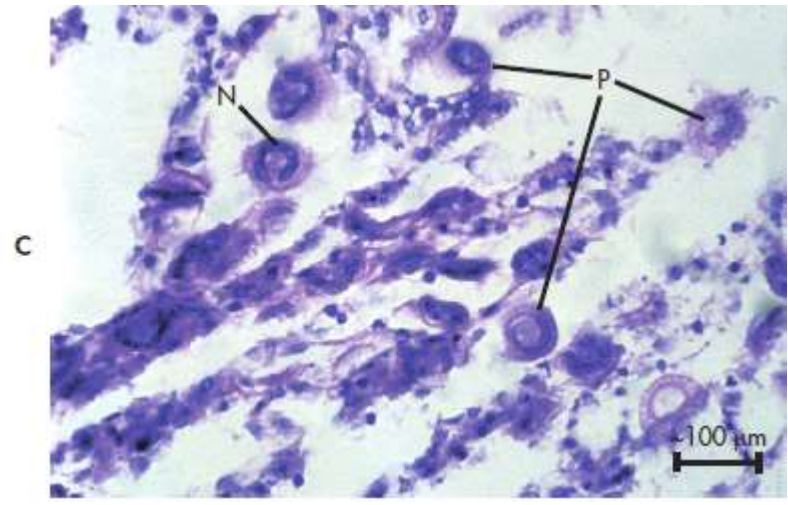
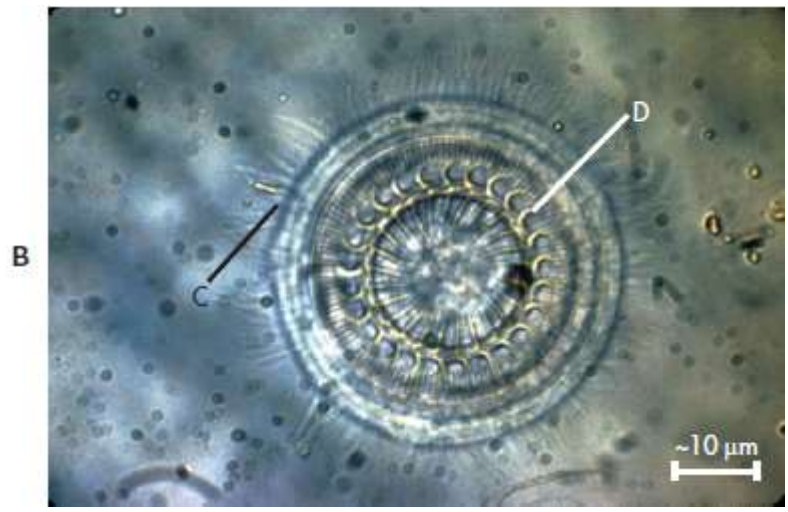
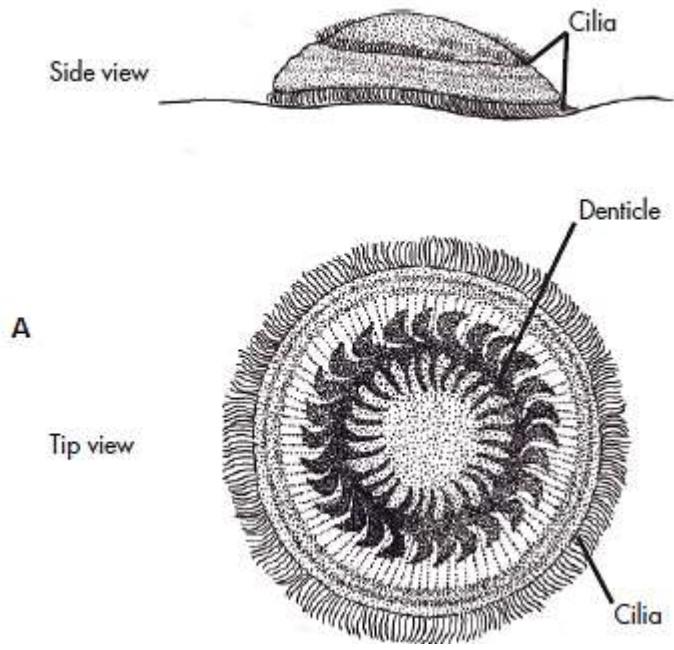
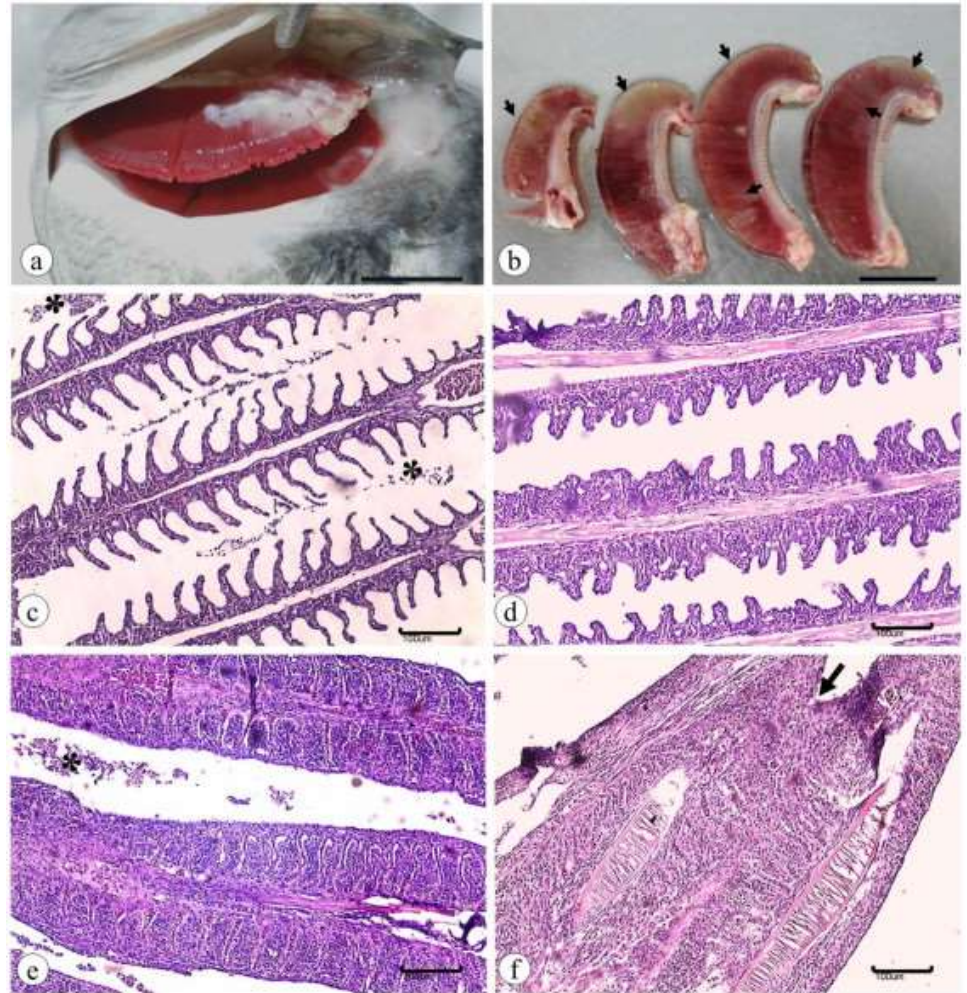


Fig. II-22. A. Diagram of a typical trichodinid parasite with key characteristics: size (15–120 μm , usually 40–60 μm in diameter); cilia for locomotion; round shape when seen from top of parasite (dorsally); and ring with hook-like denticles. B. Wet mount of a typical trichodinid parasite. C = cilia; D = denticle. C. Histological section through the gill of a goldfish with a heavy trichodinid infestation. Parasites (P) can be recognized by their round shape from above. N = nucleus. (B photograph courtesy of F. Meyer.)

- Gills of farmed Nile tilapia parasitized by *Paratrichodina* that show a milky-like aspect (a).
- whitish multifocal areas that suggest necrosis (arrow in b).
- Histological sections of the gills of Nile tilapia with different levels of infestation by *P. africana*: hyperplasia, mononuclear infiltrate, and desquamated cells
- Fish with moderate infestation with moderate hyperplasia with secondary lamellar fusion, mononuclear and eosinophilic inflammatory infiltrate, and few multifocal areas of necrosis (d).
- Fish with severe infestation with complete fusion of the secondary lamellae, proliferation of mucus cells, mononuclear and eosinophilic inflammatory infiltrate, multifocal areas of necrosis, congestion, and desquamated cells (asterisk in e). Fusion of gill filaments (arrow in f).



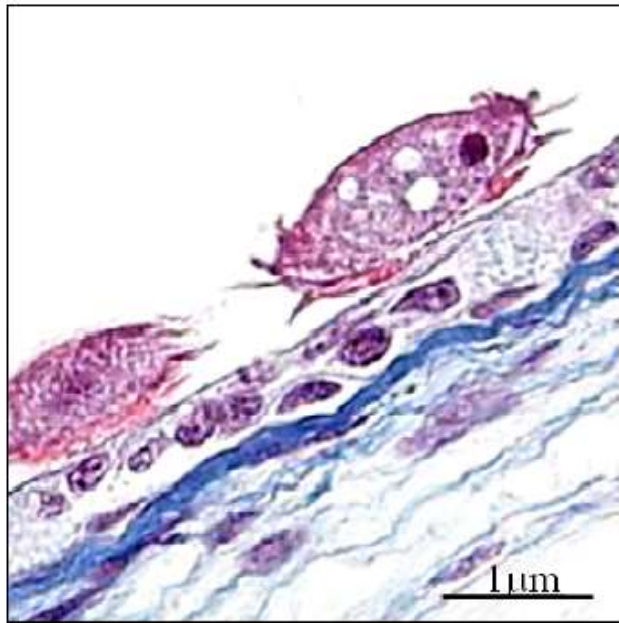


Fig. 1 *Trichodina* sp. attached to the skin of *Oncorhynchus mykiss*

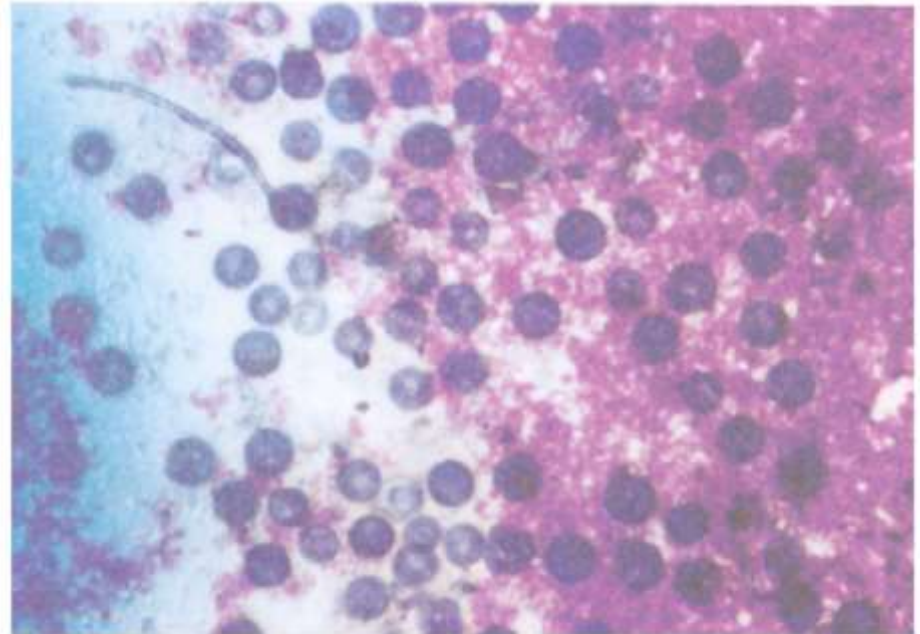


FIG. 2. Tilapia skin: showing a heavy infection by *Trichodina* sp. (Giemsa, × 100).

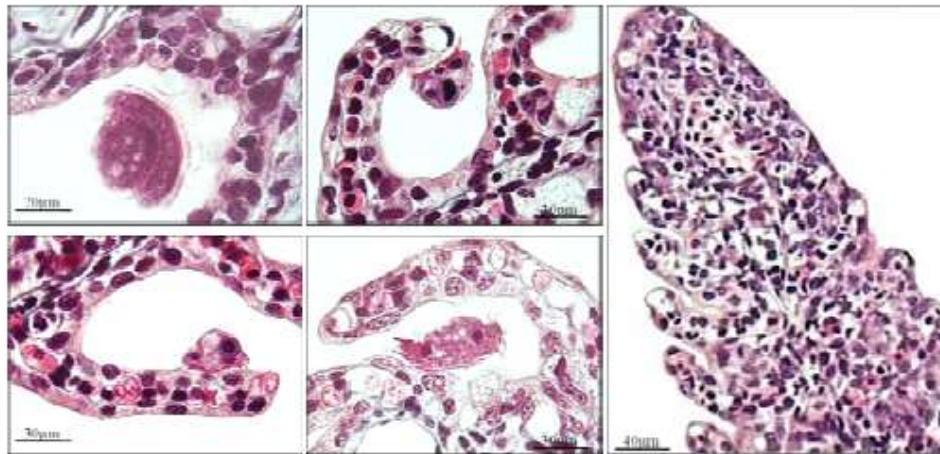
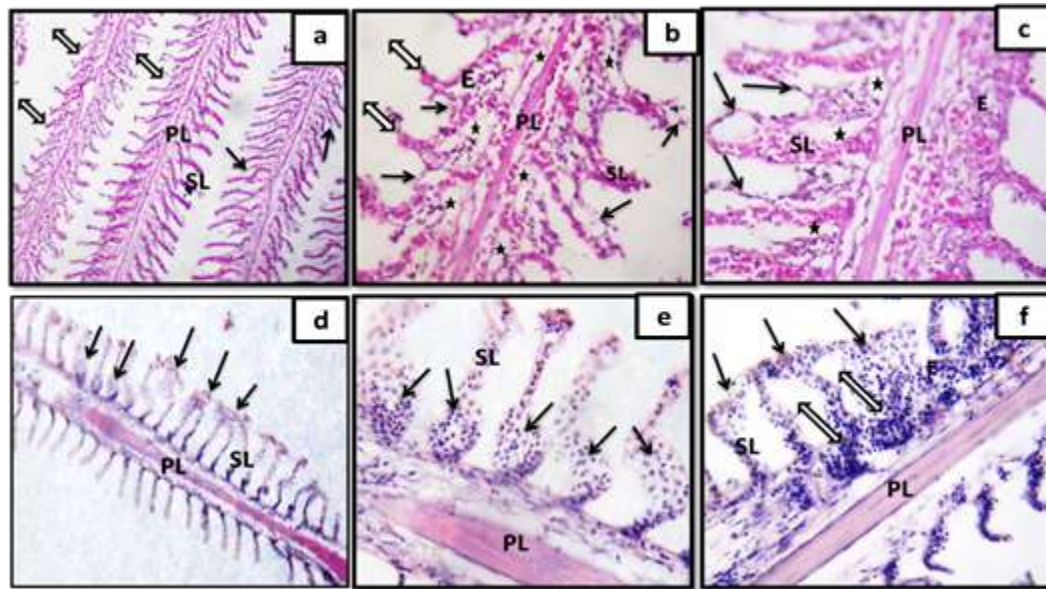


Fig. 4 Rainbow trout infected gill with *Trichodina* sp.



- (b, c) showing epithelial detaching in some secondary lamellae (arrows) and interstitial edema (stars), also (b) showed epithelial erosions causing thinning and shortening of the secondary lamellae of one primary lamella (double head arrows). (d, e and f) showed hyperplasia at both tips and bases of some secondary lamellae of one primary lamella leading to fusion of adjacent lamellae (arrows) and inflammatory cells at the bases of some secondary lamellae (double head arrows).

Treatment

- Formalin bath
- Potassium permanganate prolonged immersion
- Acetic acid bath
- Salt bath
- Freshwater bath
- Copper prolonged immersion