

External Diseases

Flavobacterial diseases



Diseases caused by yellow pigmented bacteria



Columnaris

(Saddleback disease)

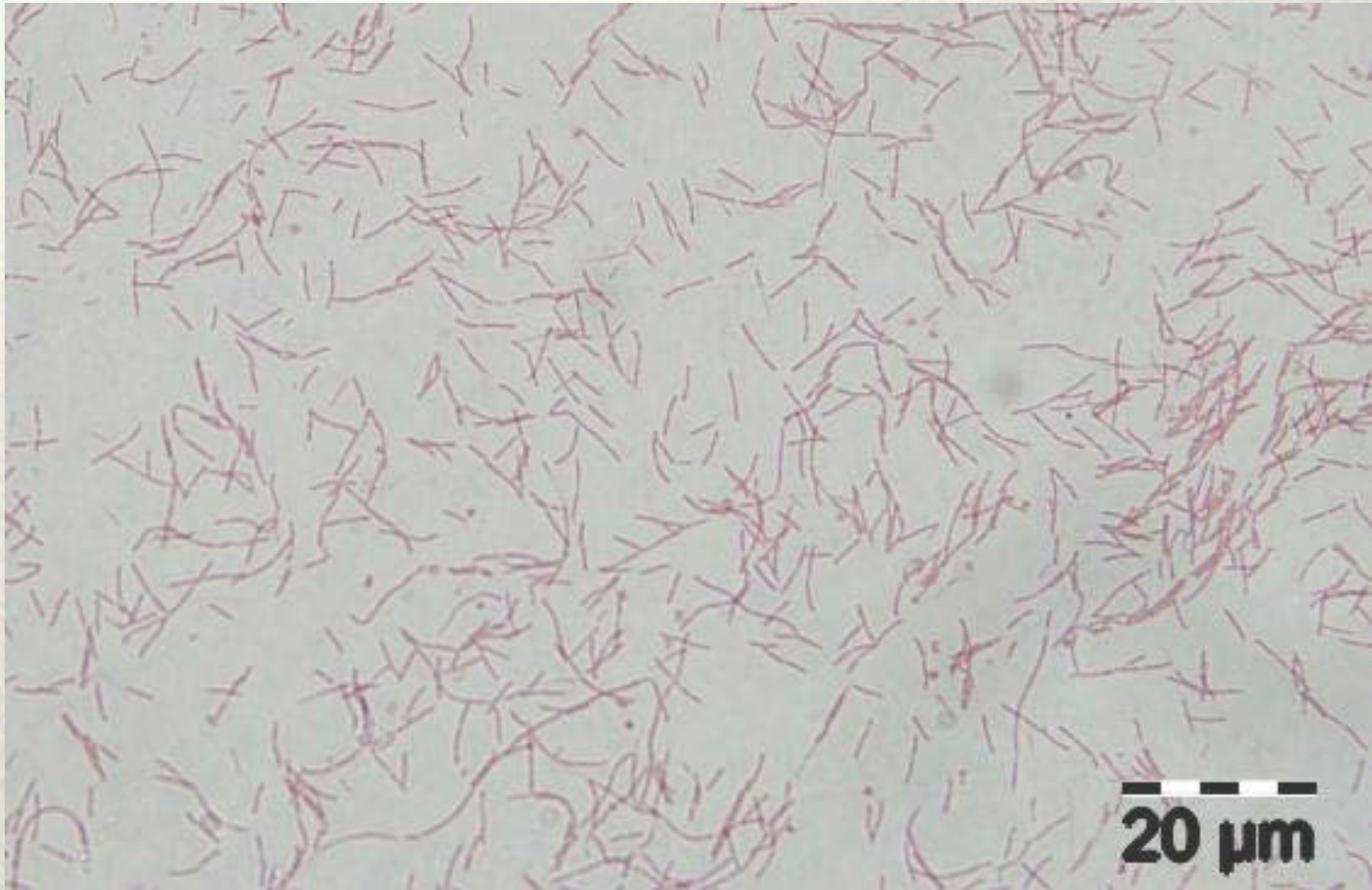


Definition

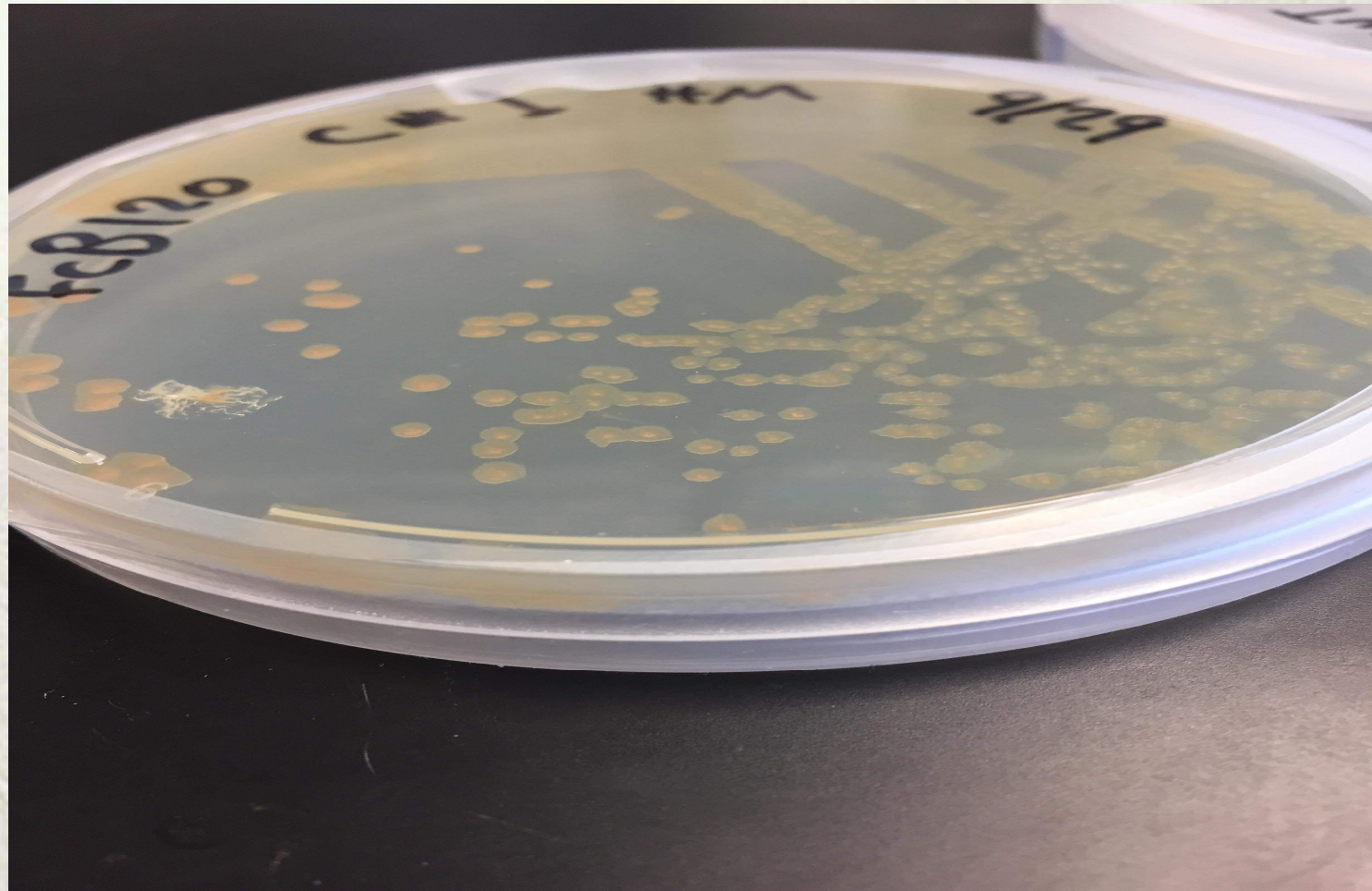
- “It's an acute to chronic disease affecting skin or gills of freshwater fish and caused by *Flavobacterium columnare*. It is characterized by development of area of grey discoloration around the base of the dorsal fin and gill necrosis”.

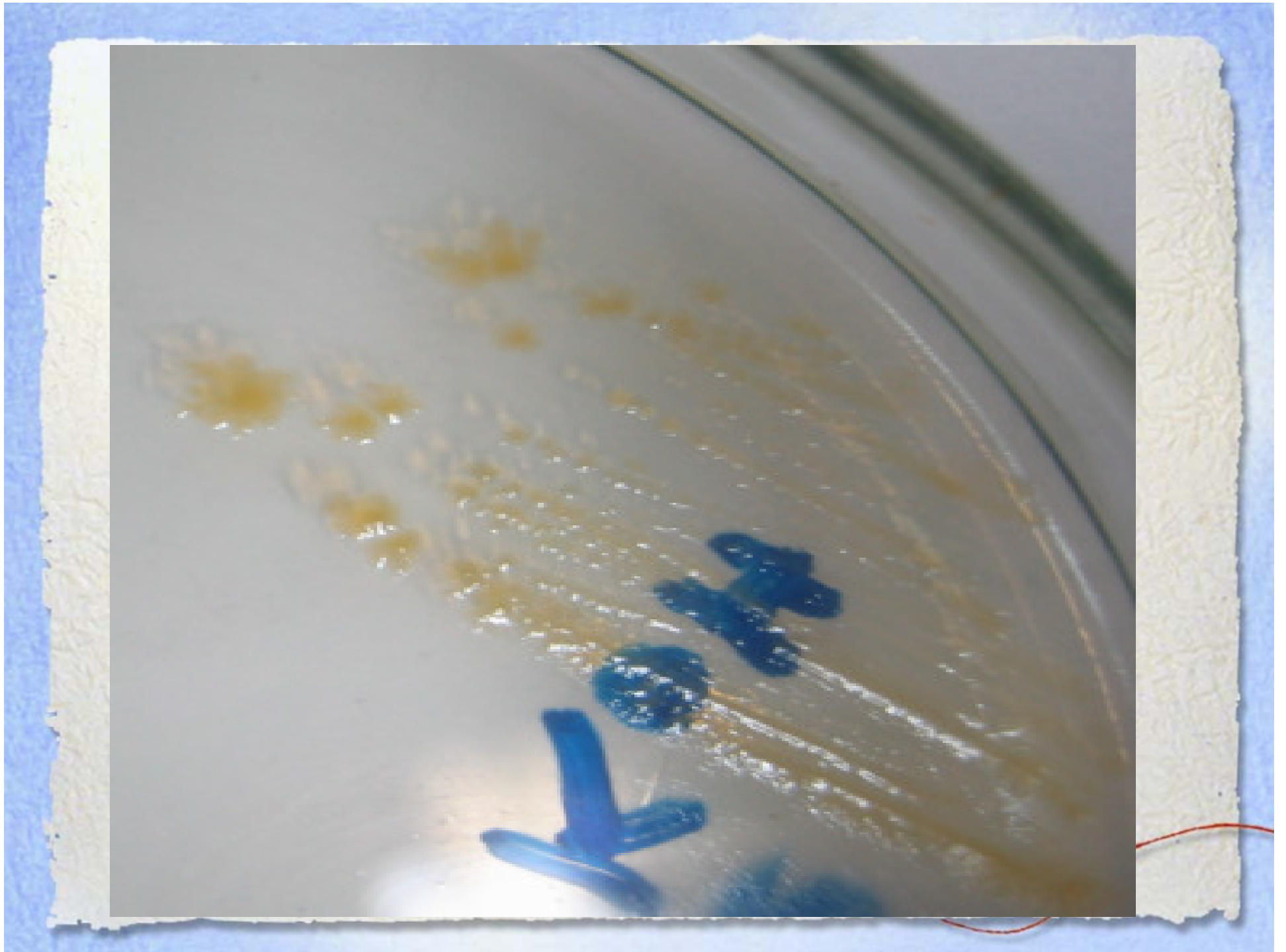
Causative Agent

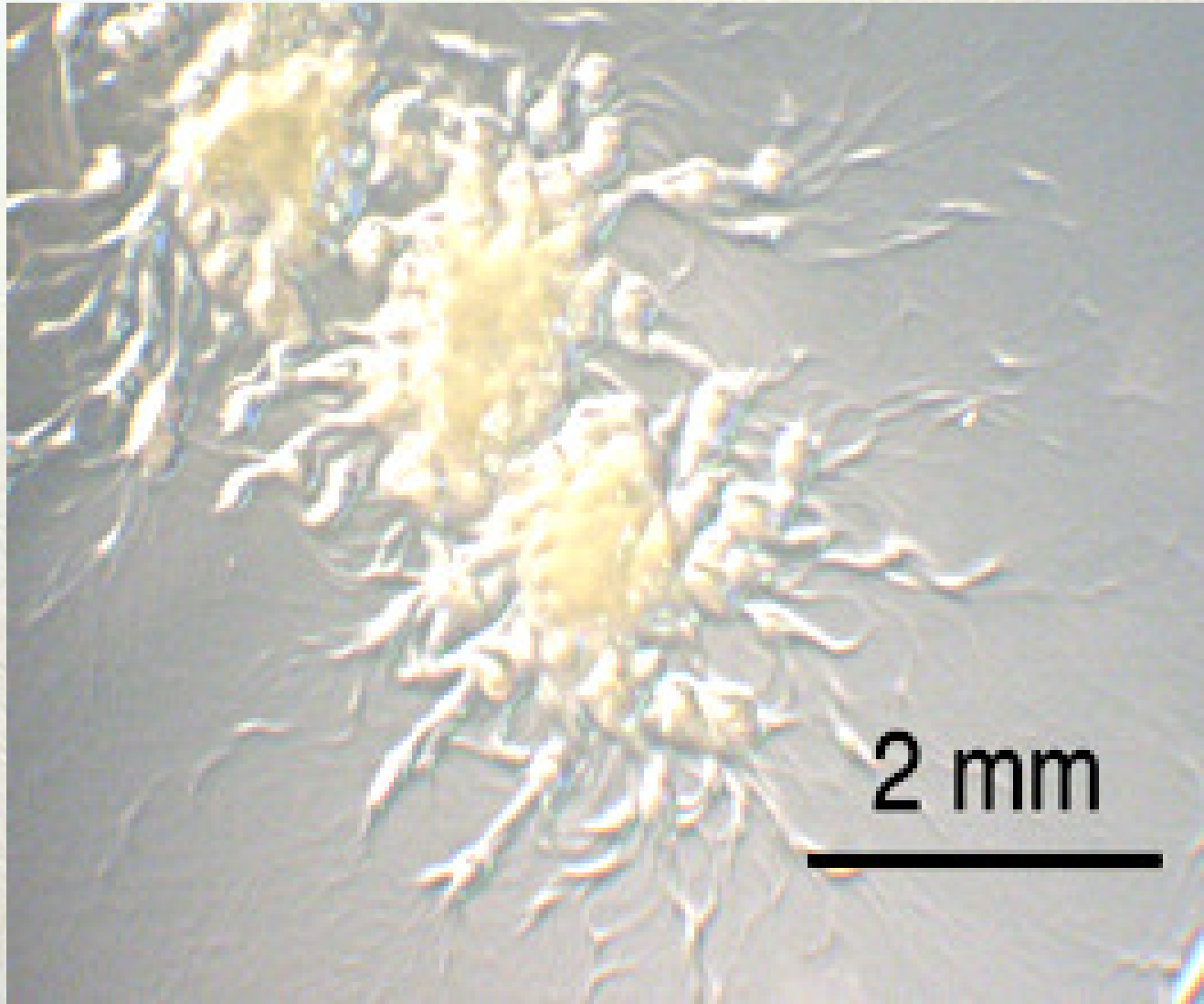
- *Flavobacterium columnare*
- Gram-negative long slender rods and motile by gliding movement



- Will not grow on most common media
 - Cytophaga agar
- Optimum temperature is 25-30C
- yellow, rhizoid, and spread across solid media surfaces forming irregular margins







2 mm

Predisposing factors

1. Rise of water temperature above 20 C.
2. Physical injury of fish (skin or gills)
3. Rough handling
4. transportation of fishes
5. Pollutants.
6. General

Epizootiology

- Predisposing factors
- Outbreaks:
 - Temperature
 - Strain virulence
 - Salinity
- Most fresh water fish species are susceptible
- Bacteria are ubiquitous in the environment

Epizootiology

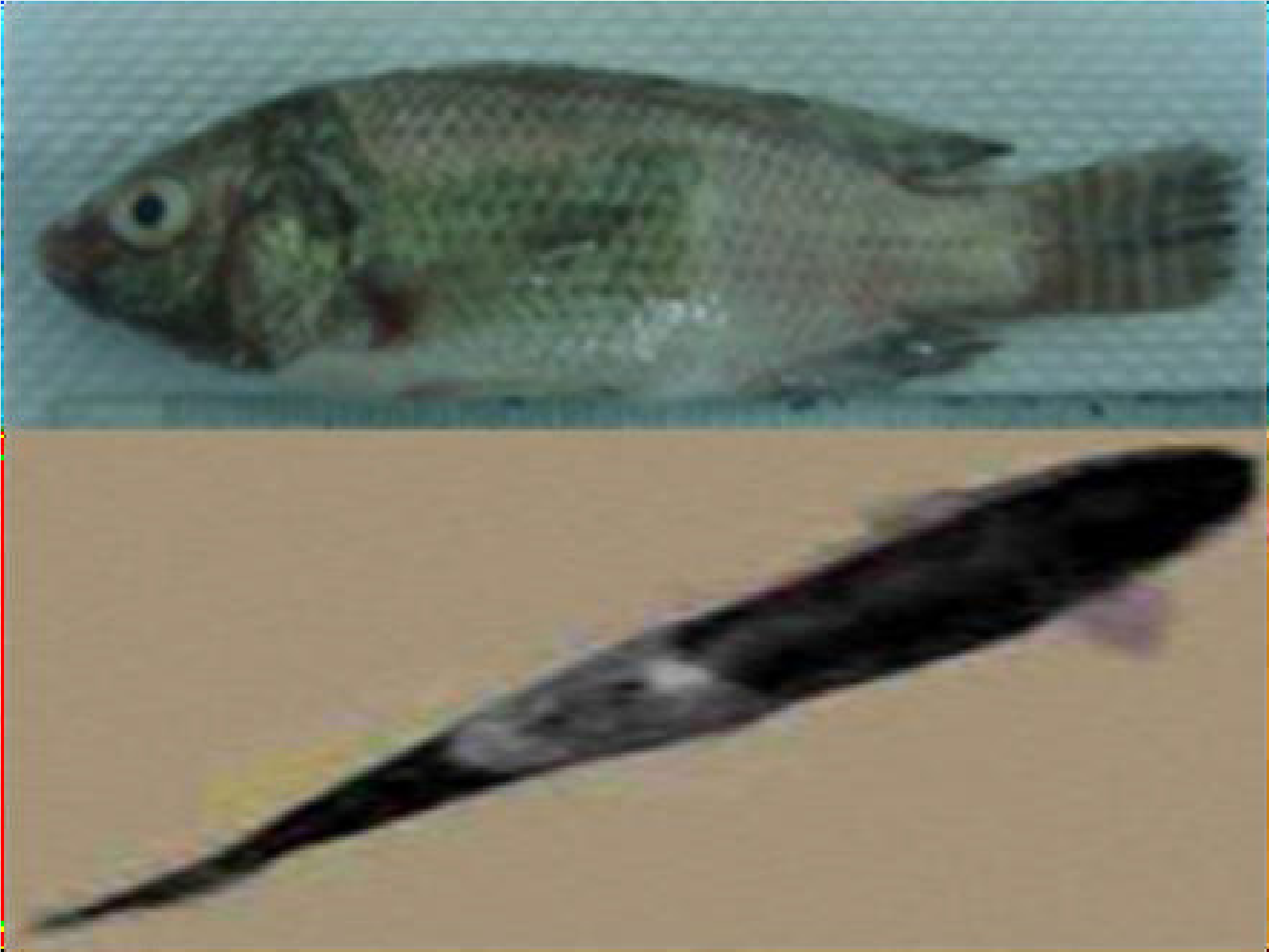
- Source of infection:
 - Diseased fish
 - water
- Transmission: Skin injuries
- Carriers play important role
- Incubation period: one day
- It is not zoonotic.

Pathogenesis and Virulence factors

chondroitin AC lyase

Clinical signs

- areas of pale discoloration at the base of the pectoral or dorsal fins
- Start as small lesions then increase in size and become as large as 20-25 % of the total surface area of the fish
- Nearly symmetrical on both sides and may look like the saddle (saddle back disease)



Rainbow trout *Oncorhynchus mykiss* exhibiting the characteristic saddleback lesion associated with columnaris disease





Clinical signs

- The surface of these area have slight lemon-yellow color.
- The skin become completely eroded
- necrosis lead to the complete loss of the pectoral fins and then spreads to the head region.
- bacteria are present in large number at the advancing edges of the lesion

Clinical signs

- Fin rot
 - complete loss of the pectoral fins
 - Caudal fin rot
- Gills have yellow-orange areas of necrosis that start at the tips of lamellae and progress toward the base
- Respiratory signs
- Rarely systemic (how it can occur????)
- Death??

Shallow skin ulcers in a channel catfish infected with *F. columnare*



Hybrid tilapia *Oreochromis niloticus* × *O. aureus* exhibiting depigmented lesions on the caudal peduncle due to columnaris disease.

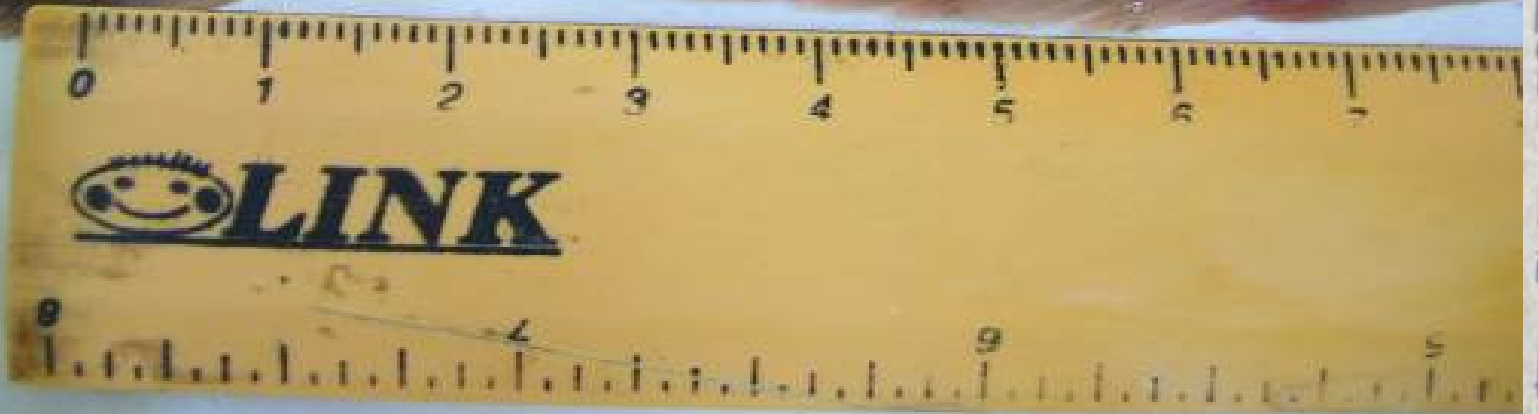




***F. columnare* naturally infected Nile catfish showing typical signs of saddle back like ulcer on the dorsal part of the fish trunk region.**











Necrotic gills in a rainbow trout infected with *F. columnare*.

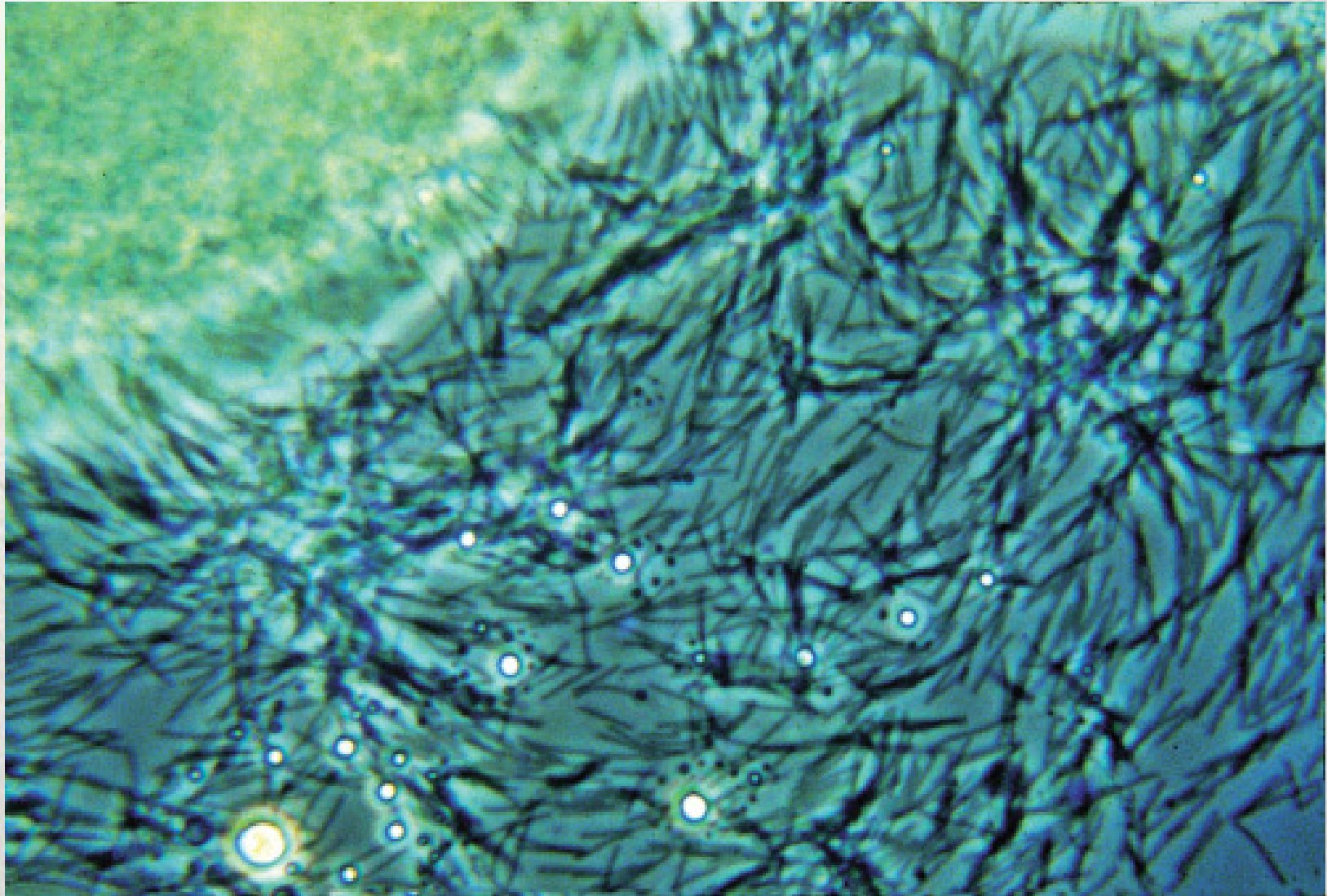




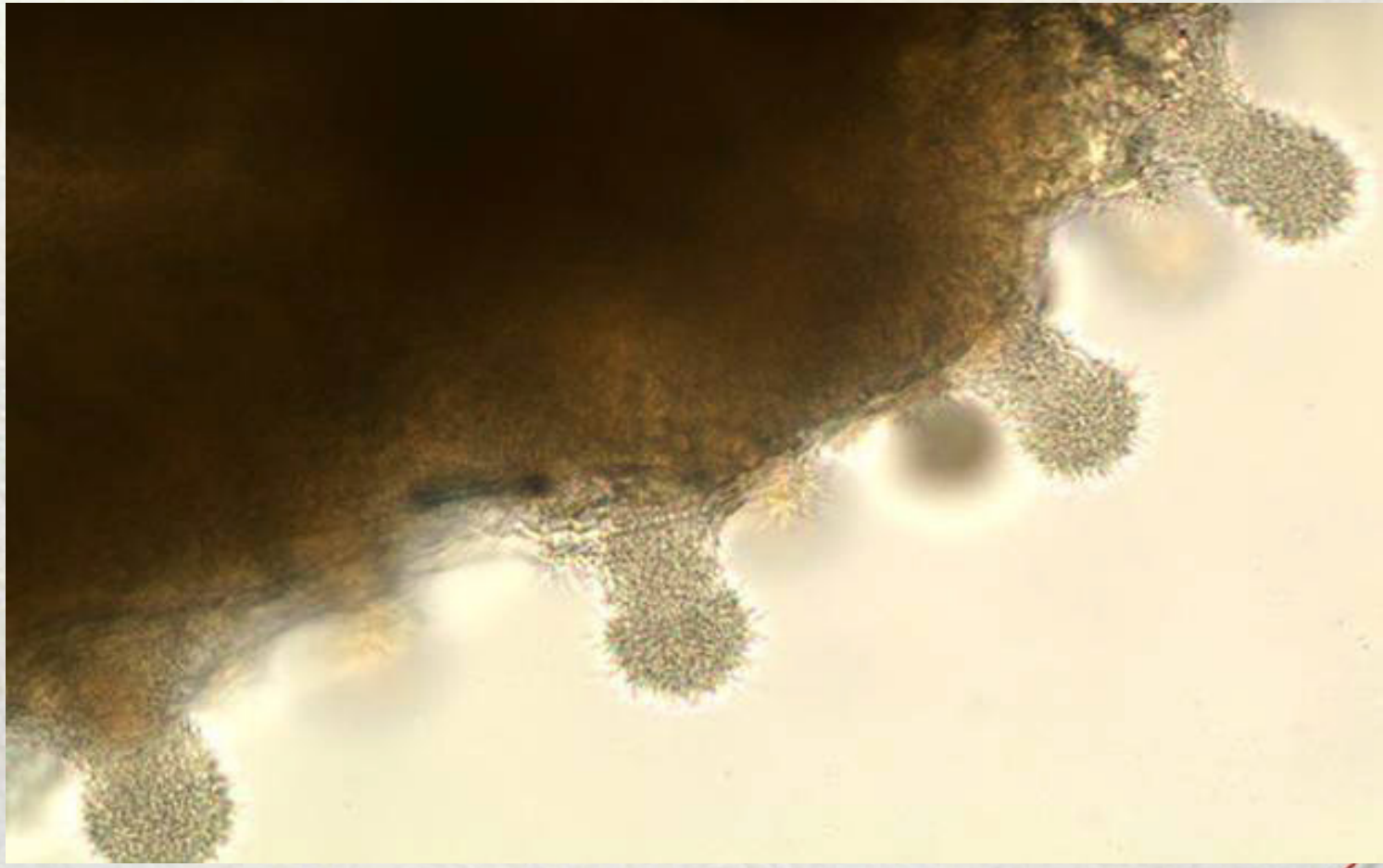


Diagnosis

- Case history
 - High temperature
 - Skin lesions
 - Acute morbidity and mortalities
- Clinical signs
- Wet mount
 - long slender (gram negative) bacteria look like “hay stack” (derived its name ????????)
 - Motility: flexing or gliding
- Isolation and ID
- Histopathology
- Molecular



Wet mount of gill tissue from a koi infected with *F. columnare*. The cells have aggregated into 'haystacks'.



Treatment

- Antiseptic baths
 - Potassium permanganate
 - Diquat
 - Copper sulfate
- Systemic antibiotic:
 - Oxytetracycline: 50-100mg/kg body weight of fish/day for 10 days
 - Resistant to sulphas

Control

- Rapid diagnosis and treatment of disease are necessary.
- Stress factors must be avoided.
- Proper management
 - Avoid trauma
 - Improve water quality
- Prophylactic treatment after transportation
- Lowering the temperature???