



# Zebrafish

The Occupational Health Program is designed to inform individuals who work with animals about potential zoonoses (diseases transmitted to humans from animals), personal hygiene and other potential hazards associated with animal exposure. This information sheet is directed toward those involved in the care and use of zebrafish (*Danio rerio*).

## Potential Injury and Zoonotic Diseases

Aside from food poisonings, the overall incidence of transmission of disease producing agents from fish to humans is low. There are a number of agents that are found in fish and aquarium water that have the potential to be transmitted to humans. In general, humans contract fish borne disease through ingestion of infected fish tissues or aquarium water, or by contamination of lacerated or abraded skin. An important feature of many of the disease causing agents is their opportunistic nature. The development of disease in the human host often requires a preexisting state that compromises the immune system. If you have an immune-compromising medical condition or you are taking medications that impair your immune system (steroids, immunosuppressive drugs, or chemotherapy) you are at risk for contracting a fish borne disease and should consult your physician or the Occupational Health physician.

The zoonotic diseases associated with care and handling fish include the following:

**Mycobacterium:** Organisms from the genus *Mycobacterium* are non-motile, acid-fast rods. Two species *M. fortuitum* and *M. marinum* are recognized as pathogens of tropical fish. Humans are typically infected by contamination of lacerated or abraded skin with aquarium water or fish contact. A localized granulomatous nodule (hard bump) may form at the site of infection, most commonly on hands or fingers. The granulomas usually appear approximately 6-8 weeks after exposure to the organism. They initially appear as reddish bumps (papules) that slowly enlarge into purplish nodules. The infection can spread to nearby lymph nodes. More disseminated forms of the disease are likely in immunocompromised individuals. It is possible for these species of mycobacterium to cause some degree of positive reaction to the tuberculin skin test.

[Click here for more information.](#)

**Salmonella:** Salmonellosis is a bacterial disease caused by the bacterium *Salmonella*. Many different kinds of *Salmonella* can make people sick. Most people have diarrhea, fever, and stomach pain that start 1 to 3 days after they get infected. These symptoms usually go away after 1 week. Sometimes, people have to see a doctor or go to the hospital because the diarrhea is severe or the infection has affected their organs. Animals

can carry *Salmonella* and pass it in their feces. People get salmonellosis if they do not wash their hands after touching the feces of animals.

[Click here for more information.](#)

**Aeromonas spp.:** Aeromonad organisms are facultative anaerobic, gram-negative rods. These organisms can produce septicemia (a severe generalized illness) in infected fish. The species most commonly isolated is *A. hydrophilia*. It is found worldwide in tropical fresh water and is considered part of the normal intestinal microflora of healthy fish. Humans infected with *Aeromonas* may show a variety of clinical signs, but the two most common syndromes are gastroenteritis (nausea, vomiting and diarrhea) and localized wound infections. Again, infections are more common and serious in the immunocompromised individual.

**Other diseases:** Other diseases that can be spread through working with fish are *Plesiomonas spp.*, *Pseudomonas fluorescens*, *E. coli*, *Klebsiella spp.*, *Edwardsiella tarda*, [Streptococcus spp.](#), *Staphylococcus spp.*, *Clostridium spp.*, *Erysipelothrix spp.*, *Nocardia spp.*, and [Cryptosporidium](#) through the ingestion of contaminated water.

## Allergic Reactions

Human sensitivity to fish proteins in the laboratory setting is rare. It remains possible, however, to become sensitized to fish proteins through inhalation or skin contact.

## How to Protect Yourself

- Wear gloves and wash your hands.
- Wear respiratory protection. If respiratory protection is worn, it is mandatory that individuals enroll in the Respiratory Protection Program through the Safety Office.
- Wear protective clothing. Avoid wearing street clothes when working with animals.
- Seek medical attention if you are injured. Contact your supervisor and Occupational Health and Safety to be instructed as to where to go to seek medical attention.
- Enroll in the Occupational Health and Safety Program. Update your information on an annual basis to ensure proper medical surveillance.