



Zoonoses in Aquatics Laboratory

This information is intended for MSVU faculty, students and staff who conduct research in the Aquatics Laboratory.

The Canadian Council on Animal care defines **Zoonoses** as infections that are “secondarily transmitted from animals to humans”. Zoonoses can result in health concerns for humans ranging from mild to severe. The potential for transmission of zoonoses from the fish in the aquatic laboratory is extremely low for people who are not immune—compromised.

Transmission of infections from animals to humans can generally be avoided through proper veterinary care and adherence to SOPs for control of transmission. It is important that everyone working in the aquatics laboratory familiarize themselves with the species that they will be working with, and the potential zoonotic diseases associated with each species. If at any time, you suspect that you have acquired a zoonotic disease, inform your supervisor and seek medical care as soon as possible.

The zoonotic diseases associated with fish contact are primarily bacterial infections such as:

- Mycobacterium(s)
- aeromonas
- campylobacter
- edwardsiella
- erysipelothrix
- escherichia
- klebsiella
- salmonella
- streptococcus iniae
- vibrio

Symptoms of bacterial infection in fish may not be specific to the specific bacterial agent. Symptoms in ill fish may include lack of appetite, lethargy, ulceration, or reddening/hemorrhage of the skin, raised or lost scales, abdominal distension, unusual behavior or poor swimming ability and bulging eyes (exophthalmia). Some fish may be infected carriers and show no symptoms at all.

It is important to regularly monitor and inspect the species and raise concerns when symptoms are suspected. Follow the species-appropriate animal husbandry guidelines as well as lab-related or species-related standard operating procedures and guidelines.

Transmission/Exposure

Transmission of zoonotic diseases are primarily by direct or indirect contact, therefore, awareness of the hazards, particularly for those who may be immune-compromised, and

good hygiene practices can reduce the risk of infection while handling the fish (living or deceased), tank water and working in the aquatics laboratory.

Routes of exposure include:

- aerosol (inhaling the organisms)
- ingestion (swallowing the organisms)
- absorption through the skin, through mucus membranes or skin wounds
- injection (accidental, in research)

Examples of Zoonotic Infection in Humans

Note: The more serious forms of diseases are often seen in immune-compromised persons, but everyone should be proactive in prevention. The examples noted below are **not** an exhaustive list.

- dermatitis
- nodules under the skin
- localized or widespread skin infections
- gastroenteritis
- lymph node infections
- arthritis
- bone infections
- septicemia

For more information on zoonoses, and for more information about specific disease organisms, the Material Safety Data Sheets (MSDS) for individual organisms published by [Health Canada Office of Laboratory Security](#) can be consulted.

Best Practices - Human

- Do not eat or drink while handling animals or in animal housing/laboratory areas.
- Wear eye and respiratory protection where appropriate or required.
- Wear gloves and/or protective sleeves when handling aquarium water, animals, animal tissues, body fluids and waste, and wash hands after contact.
- Cover abraded skin, cuts, scrapes or sores and do not allow wound contact with fish, fish-contaminated materials, or aquarium water.
- Keep animal areas clean and disinfect equipment (if appropriate) after using it on animals or in animal areas. Use cleaning techniques appropriate to the species and space and do not aerosolize dirty water or other materials.

References

The following documents have been used extensively in the formulation of this guidance:

- Canadian Biosafety Standard - [Canadian Biosafety Standard, Third Edition - Canada.ca](#) - retrieved
- Canadian Council on Animal Care - [CCAC - Canadian Council on Animal Care: Occupational Health and Safety](#) – Retrieved June 2023
- Canadian Council on Animal Care - [Guide to the Care and Use of Experimental Animals, Volume 1, 2nd Edition \(ccac.ca\)](#)– Retrieved June 2023

- Centers for Disease Control and Prevention - [Fish | Healthy Pets, Healthy People | CDC](#) – Retrieved July 2023
- Princeton University - [Zoonoses associated with Zebrafish | Office of Environmental Health and Safety \(princeton.edu\)](#) – Retrieved June 2023)
- Washington State University - [Zoonoses Associated with Fish | Institutional Animal Care and Use Committee | Washington State University \(wsu.edu\)](#) – Retrieved June 2023

Additional information and guidance can be found in each of the documents listed above.

Version History

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ACC.INFO.009	Original Version	July 2023

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