
Zebrafish Facility Work at UMass



- Ensure proper environmental conditions including a well maintained system, clean tanks and proper water quality
 - Goal : Keep fish happy and healthy!
 - Regular feedings 7 days a week - fish don't celebrate holidays!
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Intro to the the zebrafish research at UMass:

The UMass Biology department has 3 research groups who study embryonic development using the zebrafish as a model system.

Karlstrom Lab: Forebrain development and axon guidance

P.I. Rolf Karlstrom



The lab: 327 Morrill 2, phone # 7-3456

Fishroom: 151 Morrill 2

~8,500-11,000 fish

Approximately 15 mutant lines



Jensen Lab: Eye development, photoreceptor cell differentiation

P.I. Abbie Jensen



The lab: 108 Morrill 3, phone 7-2190

Fish facility: 143C Morrill 2

~6,000-7,000 fish

Approximately 13 mutant lines



Downes Lab: Development of neural circuits that control locomotion

P.I. Gerry Downes



The lab: 427 Morrill 2, phone # 5-0878

Fish facility: 149 Morrill 2

~1,400-1,900 fish, and Growing!

Approximately 10 mutant lines



Daily Chores

- Two feedings every day AM:9-10
PM:5-6
- Clean tanks! Shake baffles and siphon if necessary
- Check and record water chemistry
- Check and replace dirty filters (pads and bags)
- In certain systems conduct manual water exchange
- Run dirty dishes through dishwasher



Feedings

- AM shift feeds between 9-10
 - Adult feed is dry/flake feed #3
 - Full tank of adults receive full “pinch” scoop- adjust this scoop as needed depending on # fish
 - Juveniles receive full “nip” scoop of #2
 - Babies receive half “nip” scoop of #1
- PM shift feeds between 5-6
 - Feed are Brine Shrimp (aka sea monkeys)
 - Settle and harvest shrimp, then rinse with fresh water
 - Feed using squirt bottle to adults and juveniles
 - Older babies can get shrimp, but feed using dropper
 - Babies still receive half “nip” scoop of #1
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Brine Shrimp

Brine shrimp are in cyst form and need to hatch

When placed in salt water with aeration they will hatch in 24 hours

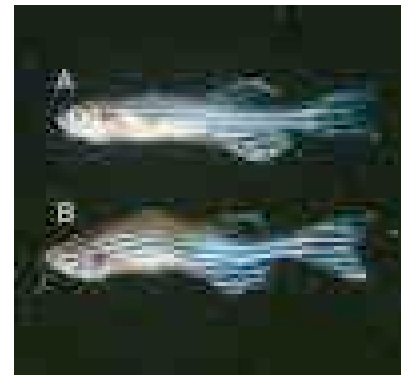
Shrimp need to settle and separate from the cysts before we can feed them to the fish; the cysts are not digestible, like eating a corn cob

Next we rinse the salt off the shrimp, and using a squirt bottle we feed it to each tank



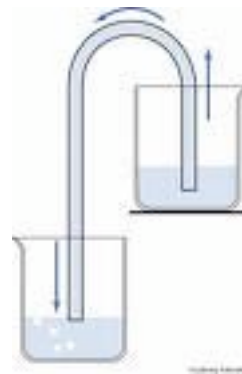
FISH HEALTH

- Removing sick and/or dead fish is very important to maintain the health of the system and other fish
- Euthanize fish humanely!! either ice or ms222
 - (its better for all the fish to get the sick fish out of the system)
- Record fish in log book after it's been iced and discarded
- Any net that's been used should be put directly into disinfectant net soak
- Items that fall on the floor should NEVER go back into the water before being disinfected and/or washed
- Wash hands before you start work and before you leave
- Use foot bath if available to disinfect shoes



Cleaning

- Each system uses filter pads and filter bags
- Filter pads can be turned to maximize usage, while filter bags should be changed depending on the PSI
- Each adult tank has a baffle in the back that should be shaken/cleared when debris is stuck
- Debris can also collect on the tank floor and needs to be siphoned out each day



Oversight of animal use at UMass

(what you should know)

IACUC: Institutional Animal Care and Use Committee

- Protects animal welfare
- Protects the University
- Helps maintain a productive research environment
- Protects the researcher
- Inspects animal facilities
- Investigates concerns
- Can suspend activities
- Main focus in on mammals,
 - but fish are vertebrates as well and come under IACUC oversight



Outside Regulators



= PHS

The Health Research Extension Act (1985) instructed NIH to provide guidelines for the use of animals in research and teaching for institutions receiving NIH funding.

This applies to all vertebrate animals

And yes, fish are vertebrates

PHS Policy

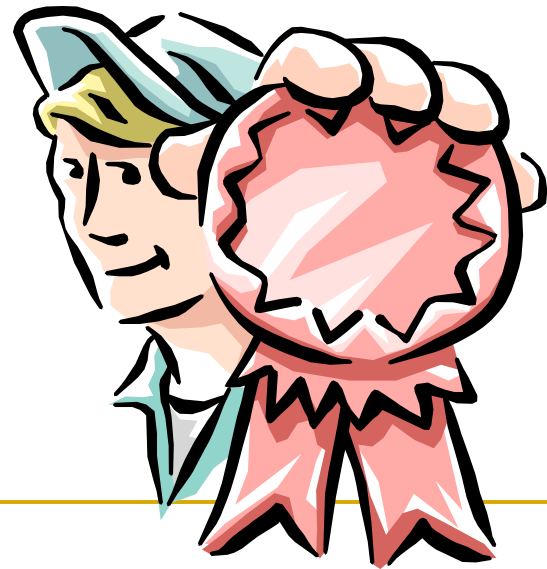
Applies to all institutions that receive funding from PHS requires:

- Consideration of **relevance**.
- Consideration of **substitutes**
- Selection of **appropriate species**.
- Using the **minimum number** of animals.
- **Minimization of discomfort, distress and pain**.
- **IACUC approval**

UMass Labs are funded by PHS (NIH)

Training and experience of personnel

- Training of principle investigator/teacher
- Training of personnel
- Length of previous animal use
- Training must be **DOCUMENTED**



We try to provide the best possible animal care:

Who is responsible?

- You
- Fish Facility Manager
 - jbennett@bio.umass.edu
- The Principal investigators
 - karlstrom@bio.umass.edu
 - ajensen@bio.umass.edu
 - gbdownes@bio.umass.edu



If you suspect deficiencies in animal care and treatment:

- Tell someone.
 - Judy Bennett: Fish Facility Manager
 - The PIs:
 - Rolf Karlstrom:
 - Abbie Jensen:
 - Gerry Downes:
 - UMass Director of Animal Care
 - Steve Plouff: splouff@research.umass.edu
 - The IACUC may conduct a confidential investigation.
 - Protection by Massachusetts “whistle-blower” statutes.
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Your Health and Safety (OH&S)

- There are regulations and guidelines that safeguard your welfare as an animal user
- The IACUC considers degree of risk to the animal users
- UMass has an **Occupational Health and Safety Program** for animal users



OHS Program

Fill out the **health history questionnaire**,

- Biosafety Officer and OHS nurse review risks.
 - Ensure necessary shots are up to date.
 - May suggest consultation with OHS nurse at UHS before working with animals.
 - May recommend or require annual health assessment updates.
 - Notify Biosafety Officer if health status or type of animal exposure changes.
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Main Rule

**If you have questions, are unclear on something, or have a concern-
don't guess, talk to US!!!!**

**You are the eyes and ears that keep the
fish happy.**
