

Identifying an optimal anesthetic for juvenile Pacific lampreys

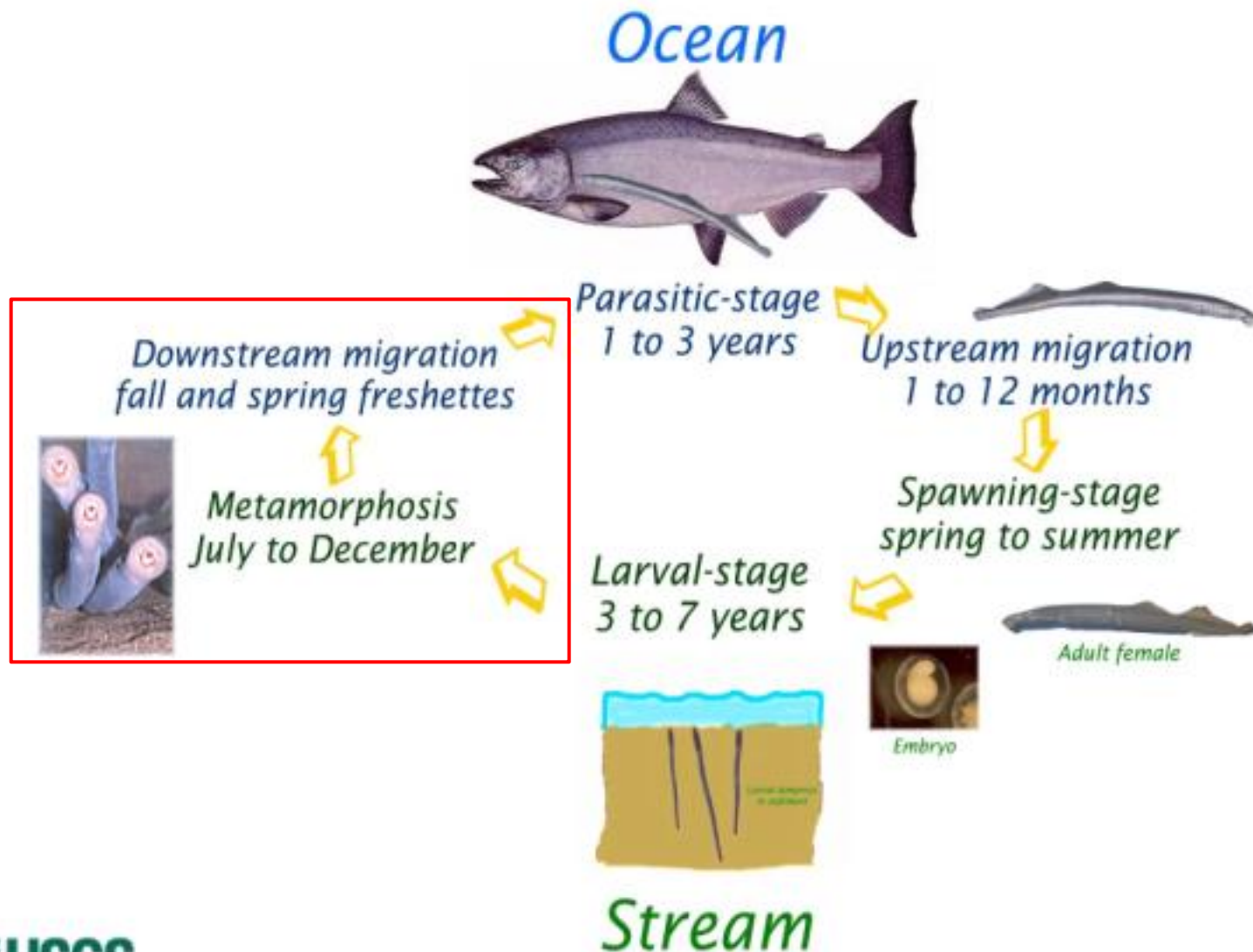
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U.S. Department of the Interior
U.S. Geological Survey



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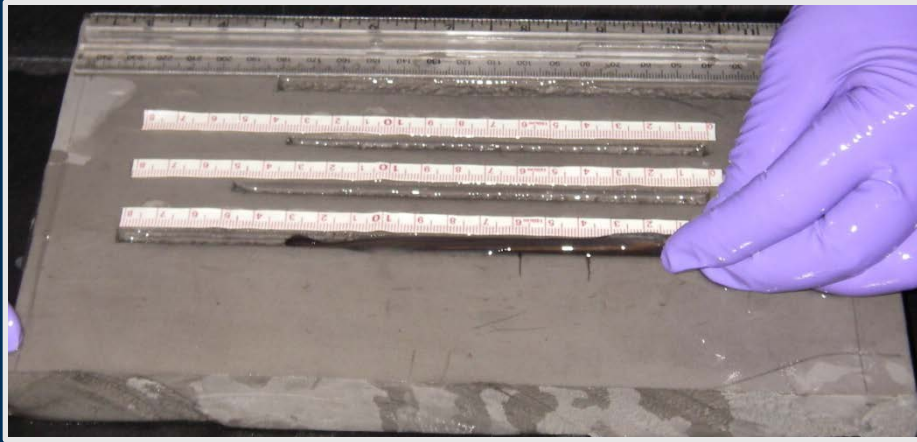
PACIFIC LAMPREY LIFE HISTORY



Why study Pacific lamprey?



When is anesthesia necessary?



Handling issues

- Reaction to high concentrations of MS-222
- Fungus



Objectives

1. Identify an effective anesthetic
2. Identify a safe anesthetic



Anesthetic efficacy trials

- Tested time to handleable and time to recovery for 4 anesthetics at 12°C

MS-222

BENZOAK (20% benzocaine)

AQUI-S 20E (10% eugenol)

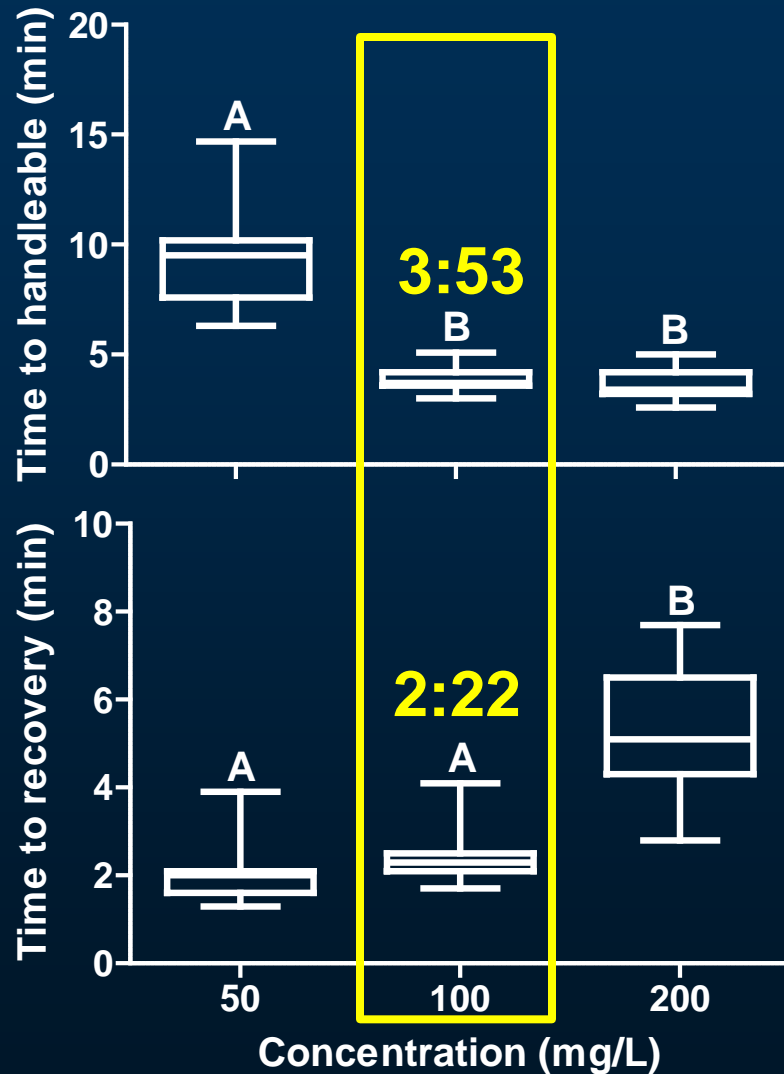
Aquacalm (metomidate hydrochloride)

- 3 concentrations per anesthetic
- 15 fish per concentration

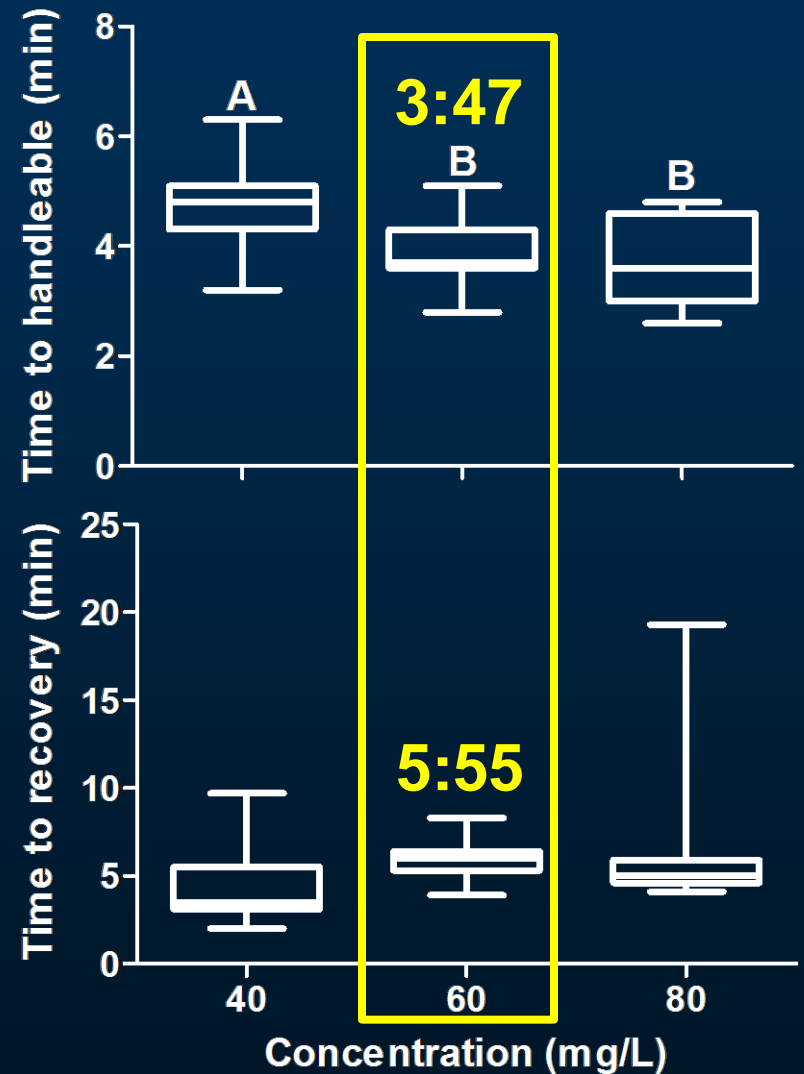


Anesthetic efficacy

MS-222

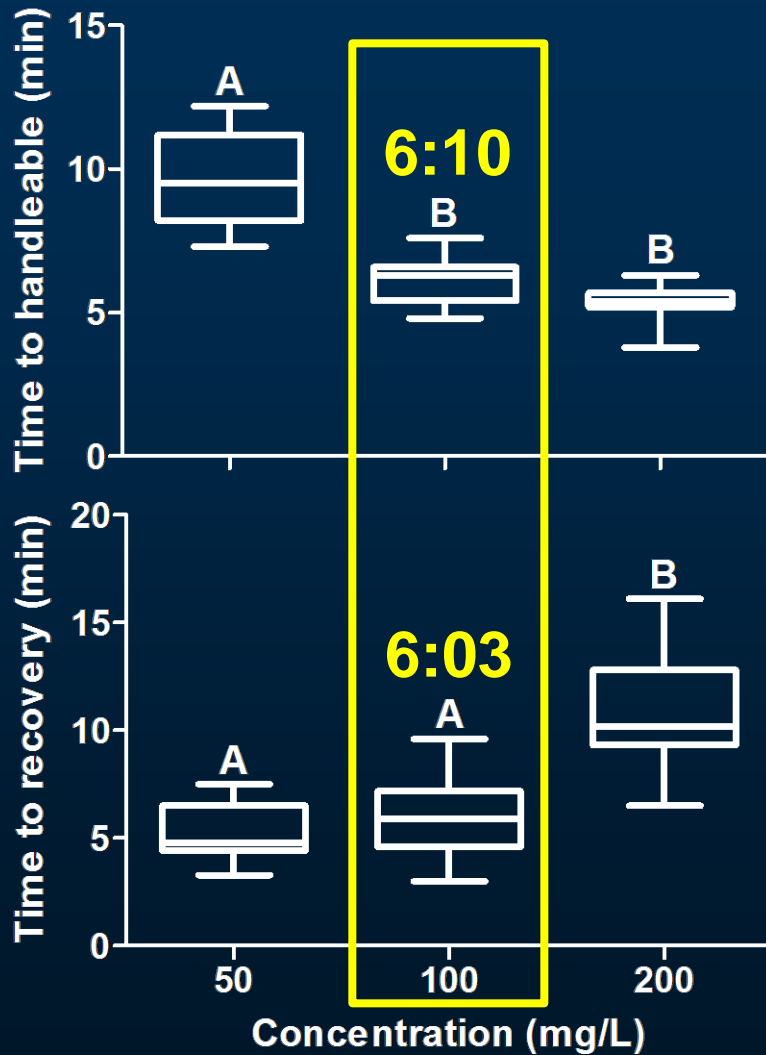


BENZOAK

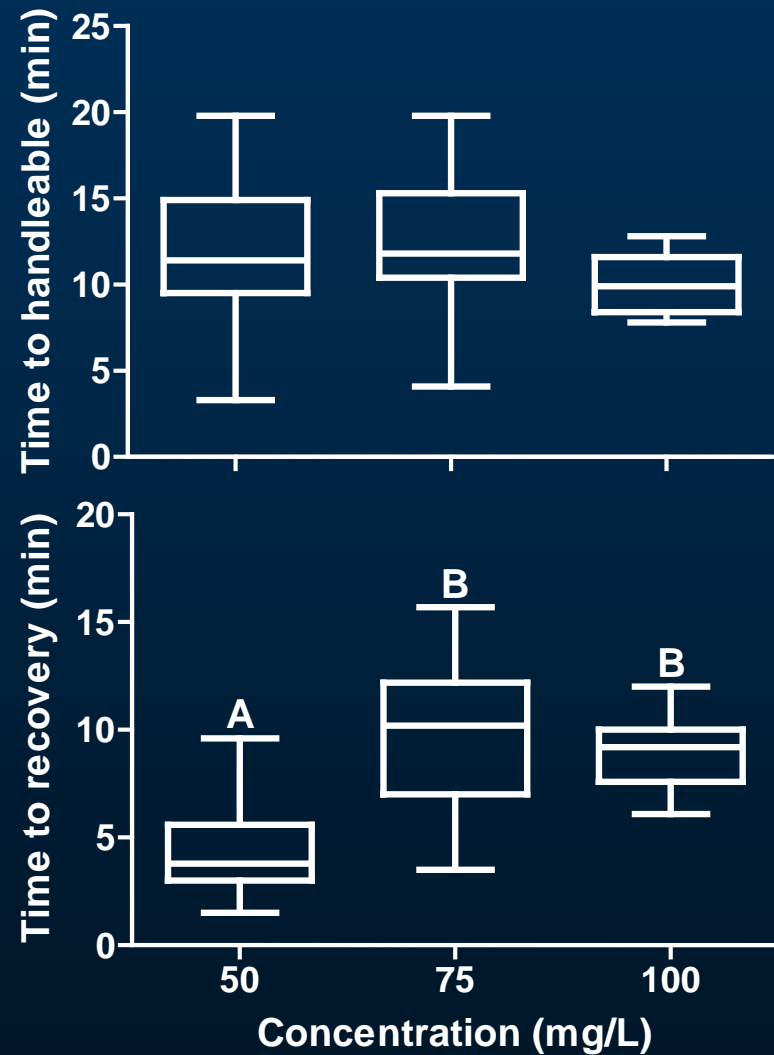


Anesthetic efficacy

AQUI-S 20E

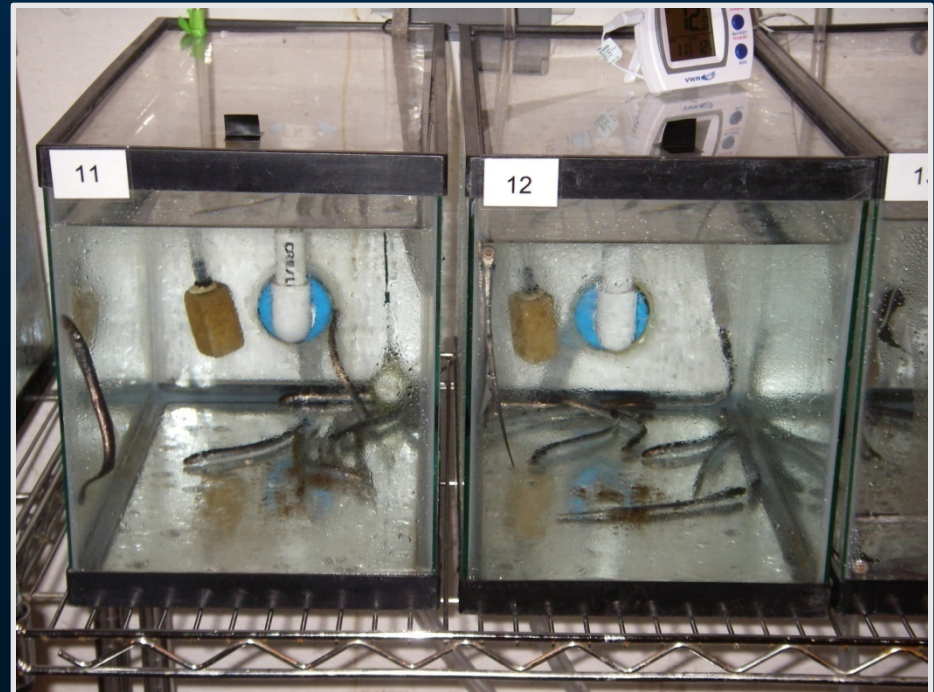


Aquacalm



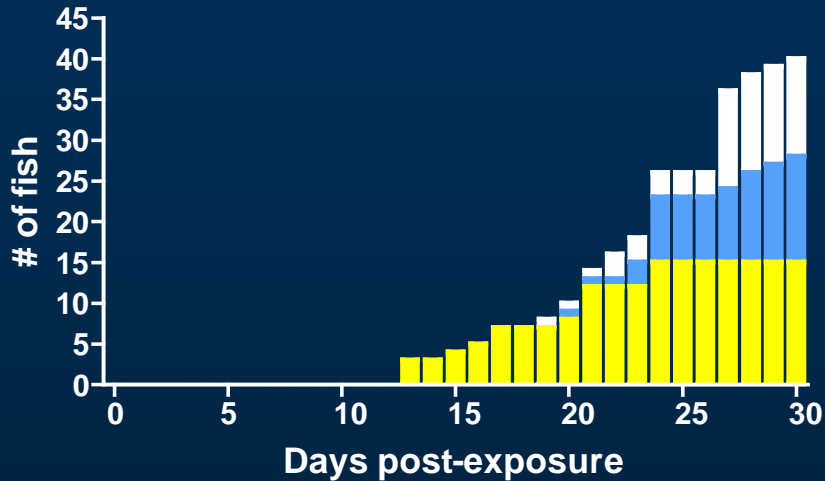
Anesthetics: Health and survival

- Treated 45 lampreys with each anesthetic until handleable
 - MS-222: 100 mg/L
 - BENZOAK : 60 mg/L
 - AQUI-S 20E: 100 mg/L
- 15 lampreys per aquarium, 3 aquaria per anesthetic
- Monitored health and survival for 30 d

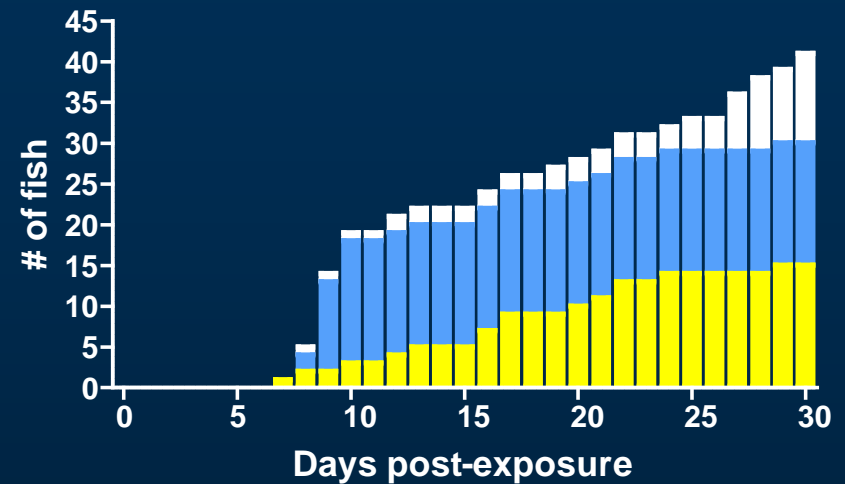


Health—Fungal infections

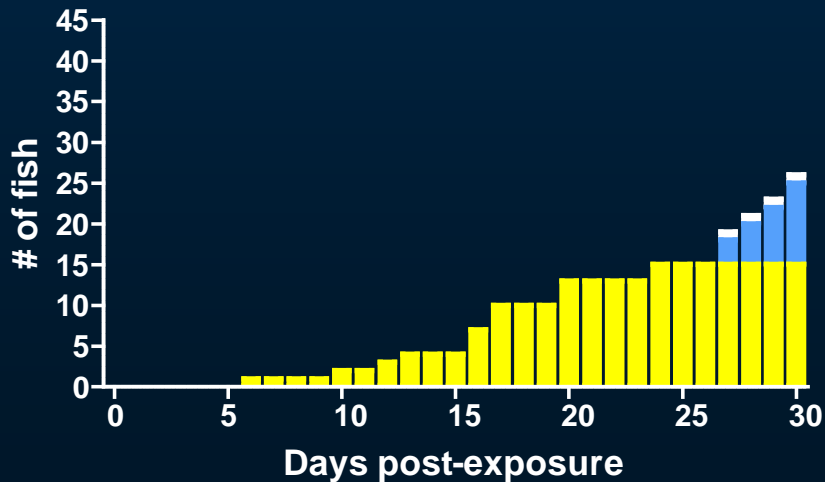
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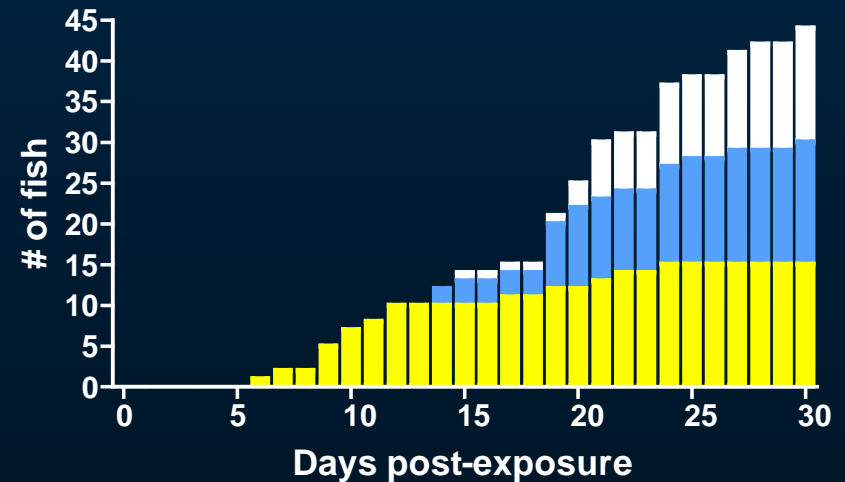
MS-222



BENZOAK

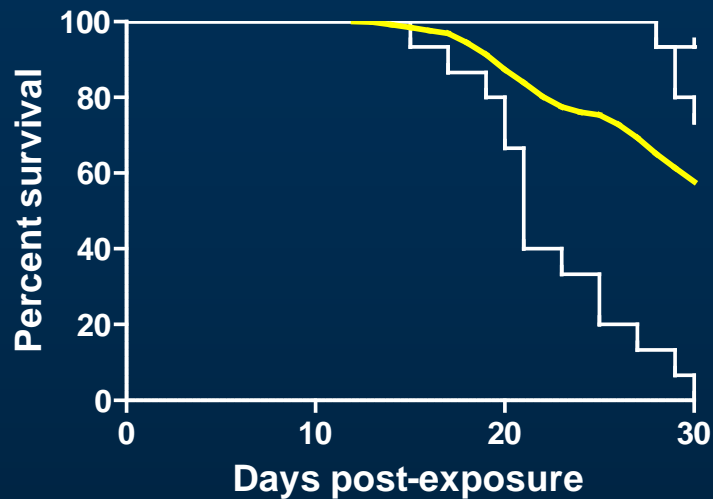


AQUI-S 20E

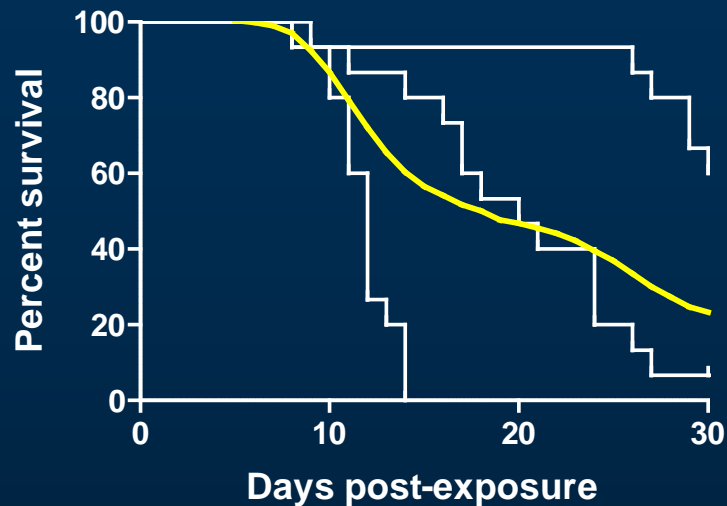


Survival

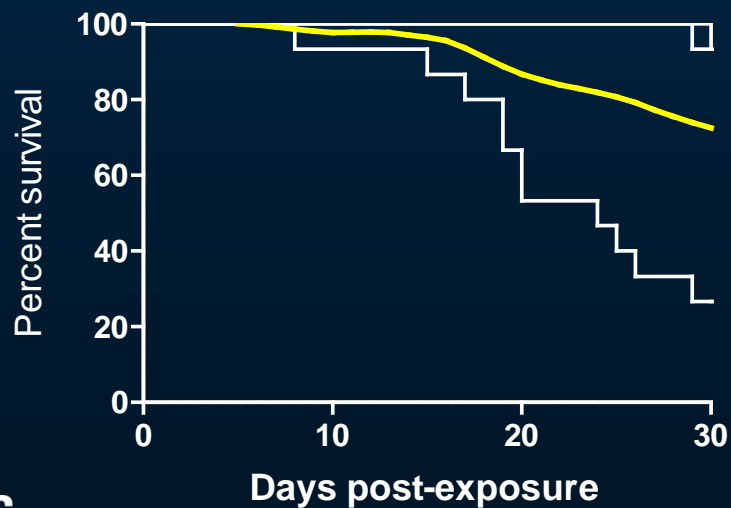
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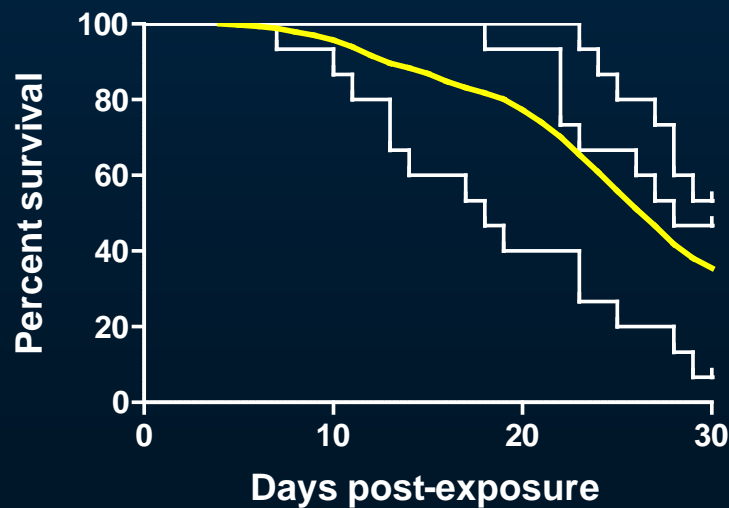
MS-222



BENZOAK

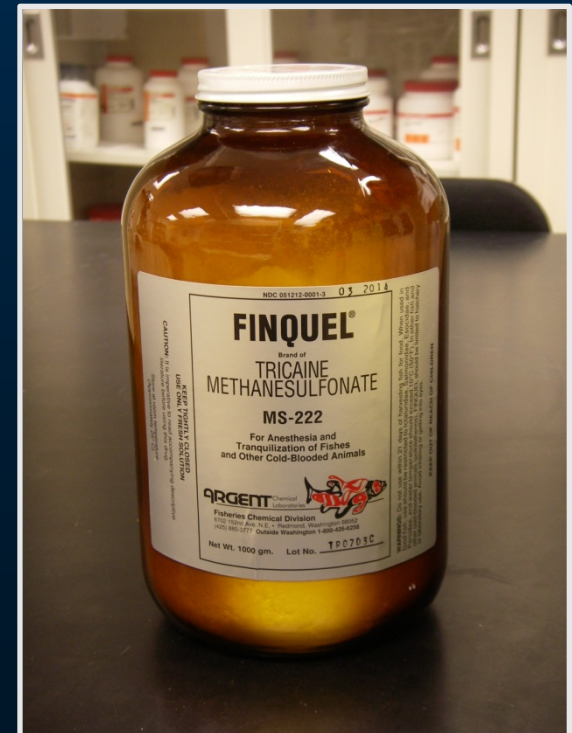


AQUI-S 20E



Summary

- MS-222 and BENZOAK are effective anesthetics for juvenile lampreys
- AQUI-S 20E and Aquacalm are poor anesthetics for juvenile lampreys
- BENZOAK may reduce fungal infections?



Future questions

- Refine dose needed
- Temperature effects
- Use of anesthetics in field studies



Thanks



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