Istituto Zooprofilattico Sperimentale delle Venezie

Networking the experience of the IIZZSS at national level

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Workshop for WOAH National Focal Points for Aquatic Animals in Europe

18-20 October 2023

What are IIZZSS?

Istituti Zooprofilattici Sperimentali (IZS - plurals IIZZSS) are public veterinary institutes covering the whole Italian territory.

Local diagnostic laboratories

- Each IZS also posses a central unit and several local laboratories covering in a unique and capillary way the Italian territories

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Fields of interest

Main fields of interest of IIZZSS are:

- animal health and welfare
- infectious diseases of animals
- zoonosis
- food safety
- risk analysis & communication
- epidemiology

for all animal species, including aquatic animal

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Reference Centers

- Each IZS hosts the National reference center for one or more diseases
- Some IIZZSS host European reference laboratory for notifiable diseases
- Some IIZZSS host International (WOAH, FAO) reference center

- They collaborate thanks to an intense networking activity

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Network Labs Fish disease
IIZZSS - Italia

Centro di referenza nazionale
per lo studio e la diagnosi delle malattie dei pesci, molluschi e crostacei

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Network Labs Molluscs disease
IIZZSS - Italia

Centro di referenza nazionale
per lo studio e la diagnosi delle malattie dei pesci, molluschi e crostacei

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Network Labs Crustacean disease
IIZZSS - Italia

Centro di referenza nazionale
per lo studio e la diagnosi delle malattie dei pesci, molluschi e crostacei

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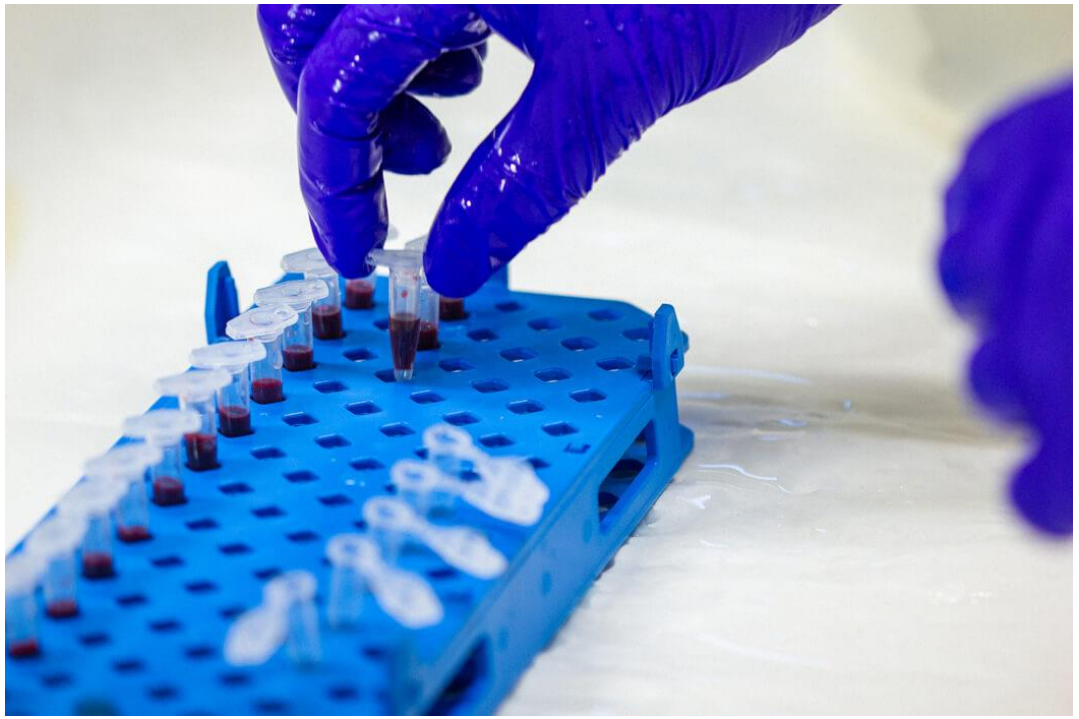
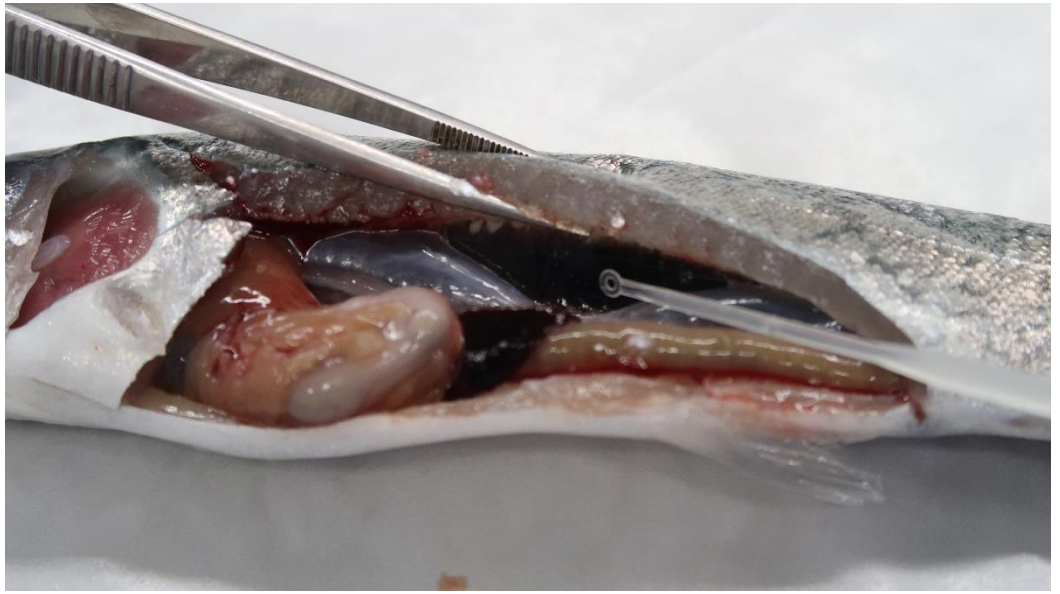
Activities of the National Reference Center

Centro di referenza nazionale
per lo studio e la diagnosi delle malattie dei pesci, molluschi e crostacei

- Share diagnostic protocols
- Share reference materials
- Training of personnel





- Collaboration in research
- Organization/participation to Proficiency tests
- Participation to the annual meeting IIZZSS

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Proficiency test

- The NRL organise every year the following proficiency tests:

a) AQUA-IB (fish and mollusc bacteriology - isolation and identification)
b) AQUA-IV-1 (fish virology – isolation and identification)*
c) AQUA IV-2 (fish virology – KHV molecular methods)*
d) AQUA-PM (mollusc parasitology – identification)

Aqua
Circuito interlaboratorio per l'assicurazione qualità dei risultati

*accredited

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Meeting IIZZSS

Held annually, possibly in presence, itinerant

- Update scientific knowledge on aquatic animal diseases in general
- Update on application of EU/National Regulation
- Discuss interesting clinical cases
- Discuss results of PTs

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An example of collaboration

- Current research project: Evaluation of Epidemiological Cut Offs (ECOFF) for the execution of Minimal Inhibitory Concentrations (M.I.C.) against the main bacterial pathogens of fish

- Participants:
  - **U.O. IMS 01** – Amedeo Manfrin CRN **IZS delle Venezie** – Lab. di batteriologia
  - **U.O. IMS 02** – Monia Cocchi – **IZS delle Venezie** - Sezione di Udine
  - **U.O. IMS 03** – Marica Toson – **IZS delle Venezie** - SCS4 Lab. epidemiologia applicata all'ambiente acquatico
  - **U.O. IMS 04** – Giuseppe Arcangeli – **IZS delle Venezie** – Lab. molluschi
  - **U.O. IMS 05** – Paolo Pastorino – **IZS Piemonte Liguria Valle d'Aosta** – Laboratorio di Acquacoltura, Ittiopatologia e Biologia degli ambienti acquatici
  - **U.O. IMS 06** – Francesco Agnetti – **IZS Umbria e Marche** - Sezione di Terni
  - **U.O. IMS 07** – Francesca Susini – **IZS Lazio e Toscana** – Lab. ittiopatologia Sezione di Pisa
  - **U.O. IMS 08** – Teresa Bossù – **IZS Lazio e Toscana** – Roma – Centro Regionale per gli enterobatteri patogeni
  - **U.O. IMS 09** – Fabio Di Nocera – **IZS del Mezzogiorno** – Portici (NA) – Lab. diagnostica speciale: ittiopatologia
  - **U.O. EMS 10** – Marialetizia Fioravanti – **University of Bologna** - Dipartimento di Scienze Mediche Veterinarie

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Current research project/1

Aim

- Determine the Epidemiological Cut Offs of the most important marine (*Vibrio anguillarum, Vibrio harveyi, Photobacterium damselae subsp. piscicida*) and freshwater (*Aeromonas salmonicida, Yersinia ruckeri and Lactococcus garvieae*) bacterial pathogens in relation to the main drugs that can be used as therapy in aquaculture

Material and method

- Standardize the M.I.C. methods (hands on training)
- Test a large panel of bacterial isolates coming from the repositories of the different IIZZSS
- Data collection and analysis

Current research project/2

- **Results:** preliminary results on *Aeromonas salmonicida*

LABORATORIO	N° ISOLATI	% RELATIVA
IZSLT-PISA	15	15%
IZSUM	15	15%
IZSVE-CSI	23	23%
IZSVE-UDINE	15	15%
UNIBO	33	33%
TOTALE	101	100%

susceptible strain

	1	2	3	4	5	6	7	8	9	10	11	12
A	ERY 32	ERY 16	ERY 8	ERY 4	ERY 2	ERY 1	ERY 0,5	ERY 0,25	ERY 0,125	ERY 0,063	GC+	GC-
B	ENR 8	ENR 4	ENR 2	ENR 1	ENR 0,5	ENR 0,25	ENR 0,125	ENR 0,063	ENR 0,031	ENR 0,016	ENR 0,008	ENR 0.004
C	FLM 32	FLM 16	FLM 8	FLM 4	FLM 2	FLM 1	FLM 0,5	FLM 0,25	FLM 0,125	FLM 0,063	FLM 0,031	FLM 0,016
D	AMX 32	AMX 16	AMX 8	AMX 4	AMX 2	AMX 1	AMX 0,5	AMX 0,25	AMX 0,125	AMX 0,063	AMX 0,031	AMX 0,016
E	FLL 64	FLL 32	FLL 16	FLL 8	FLL 4	FLL 2	FLL 1	FLL 0,5	FLL 0,25	FLL 0,125	FLL 0,063	FLL 0,031
F	OXY 16	OXY 8	OXY 4	OXY 2	OXY 1	OXY 0,5	OXY 0,25	OXY 0,125	OXY 0,063	OXY 0,031	OXY 0,016	OXY 0,008
G	DOX 16	DOX 8	DOX 4	DOX 2	DOX 1	DOX 0,5	DOX 0,25	DOX 0,125	DOX 0,063	DOX 0,031	DOX 0,016	DOX 0,008
H	T/S 8/152	T/S 4/76	T/S 2/38	T/S 1/19	T/S 0,5/9,5	T/S 0,25/ 4,75	T/S 0,125/ 2,375	T/S 0,063/ 1,188	T/S 0,031/ 0,594	T/S 0,016/ 0,297	T/S 0,008/ 0,148	T/S 0,004/ 0,074

resistant strain

	1	2	3	4	5	6	7	8	9	10	11	12
A	ERY 32	ERY 16	ERY 8	ERY 4	ERY 2	ERY 1	ERY 0,5	ERY 0,25	ERY 0,125	ERY 0,063	GC+	GC-
B	ENR 8	ENR 4	ENR 2	ENR 1	ENR 0,5	ENR 0,25	ENR 0,125	ENR 0,063	ENR 0,031	ENR 0,016	ENR 0,008	ENR 0.004
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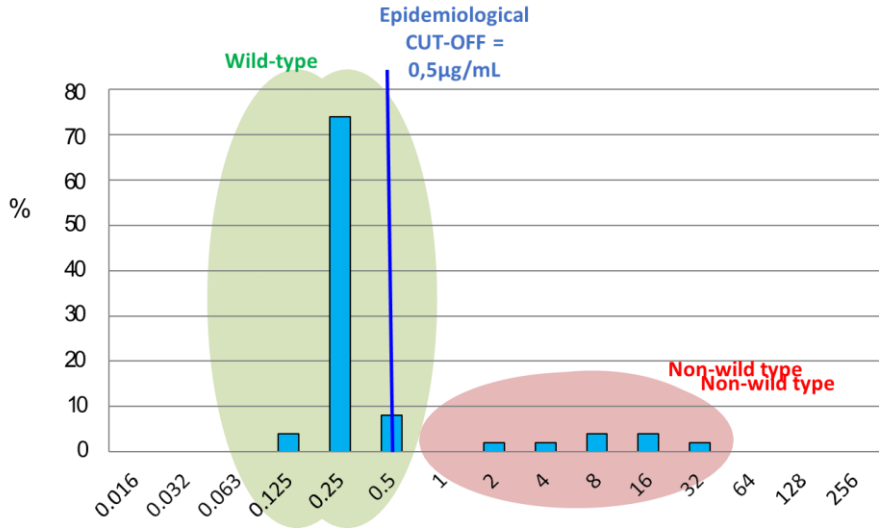
- On going analysis on *Yersinia ruckerii, Vibrio harveyi* and *Lactococcus garvieae*



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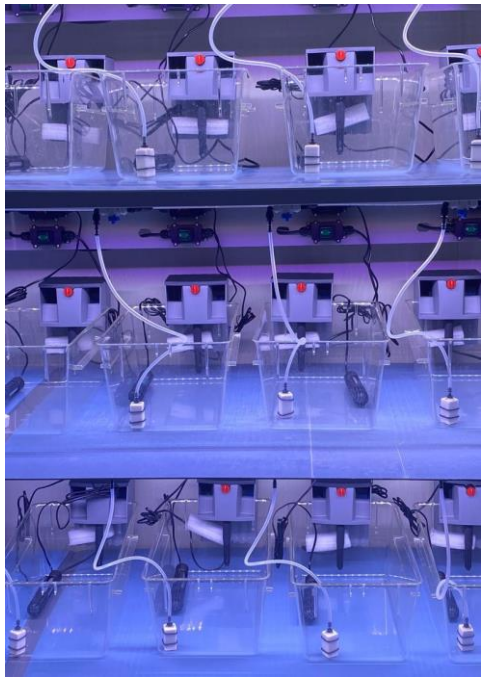
Experimental aquarium IZSVE

- 3 fiberglass tanks of 2500 liters
- 2 fiberglass tanks of 380 liters
- 12 fiberglass tanks of 300 liters
- 16 fiberglass tanks of 70 liters
- 8 fiberglass tanks of 280 liters
- 1 G-hab system equipped with 12 tanks (10 L each)



Other examples of collaboration

- Threats to aquatic biodiversity in the era of "climate change": emerging pathogens and persistent organic contaminants in collaboration with **IZS Piemonte Liguria Valle d'Aosta** (ongoing)

- IZSVe and **IZSUM** collaboration with the Monti Sibillini National Parc for gaining the VHS-IHN free status

- Reduction and control of antimicrobial resistance (AMR) through the development, development and validation of **new veterinary vaccines** with a bacterial, viral, protozoan and fungal matrix (BVPF); mono- and multi-valent formulated with innovative adjuvants in collaboration with **IZSUM**

    - Evaluation of susceptibility to VHS and IHN of the Mediterranean Trout (*Salmo cettii*) in collaboration with **IZS of Sicily** (under evaluation)

    - Evaluation of NIR as prognostic methods during diseases infection in collaboration with **IZS Piemonte Liguria Valle d'Aosta** (under evaluation)

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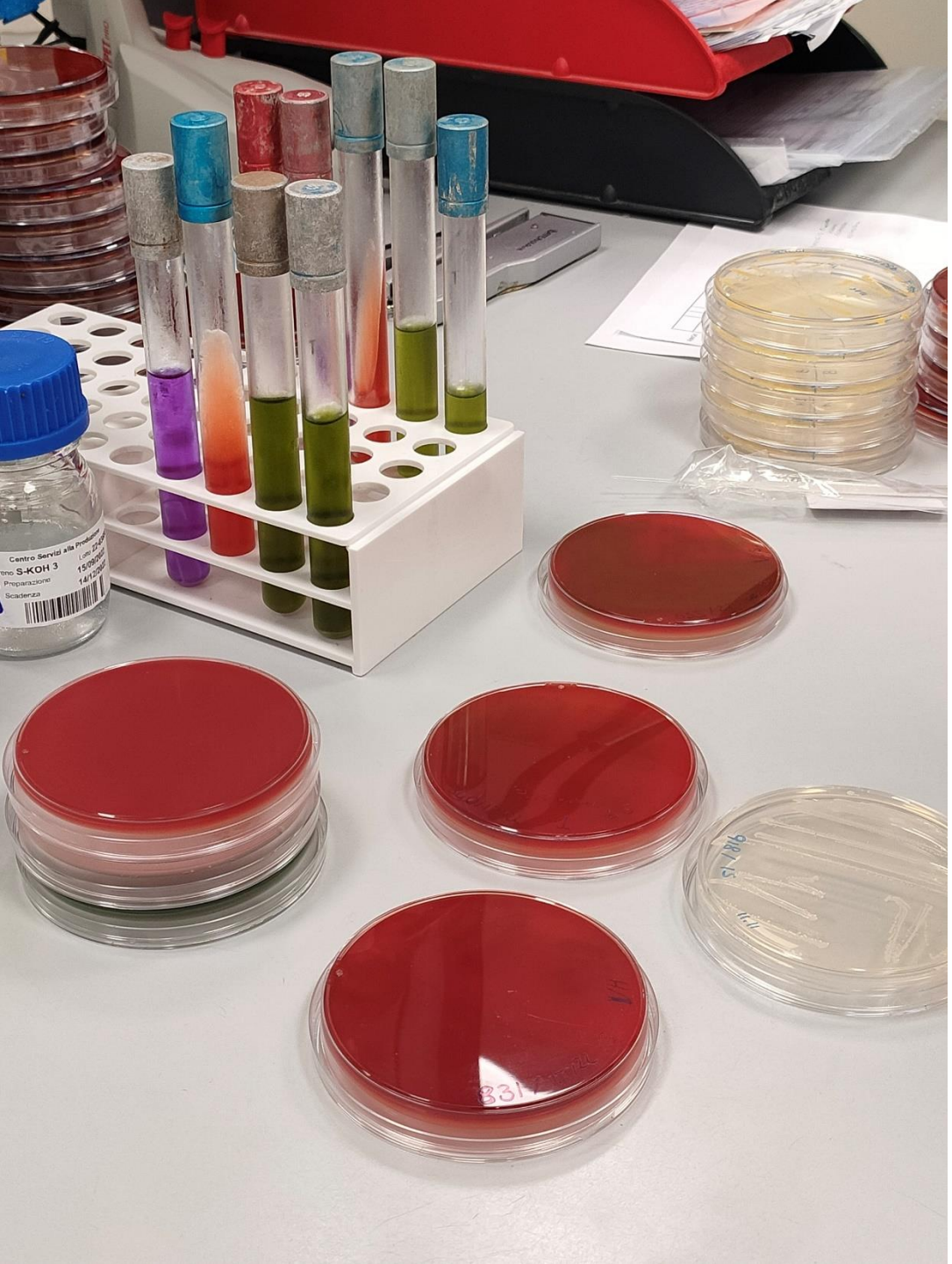

Thank for your attention!