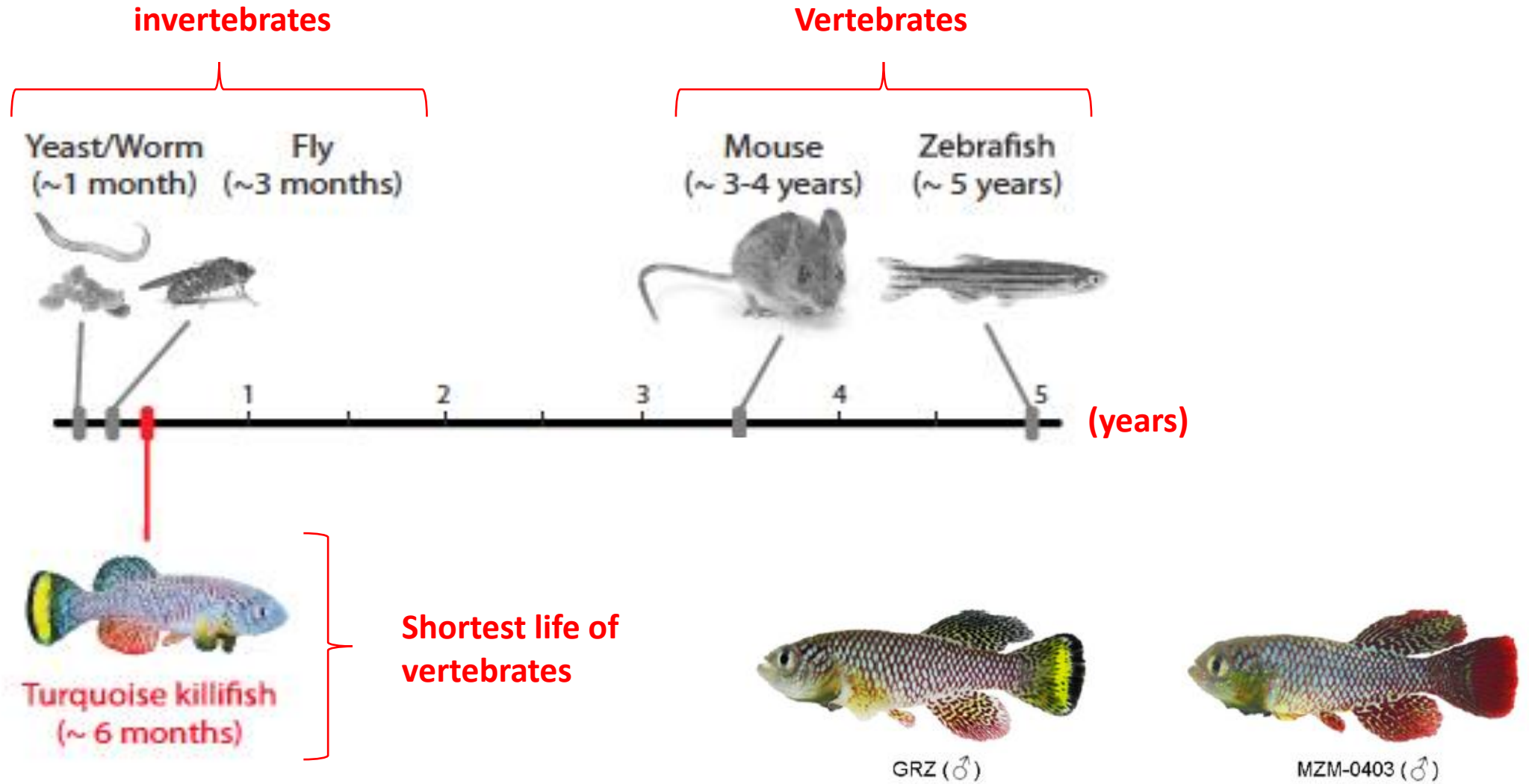




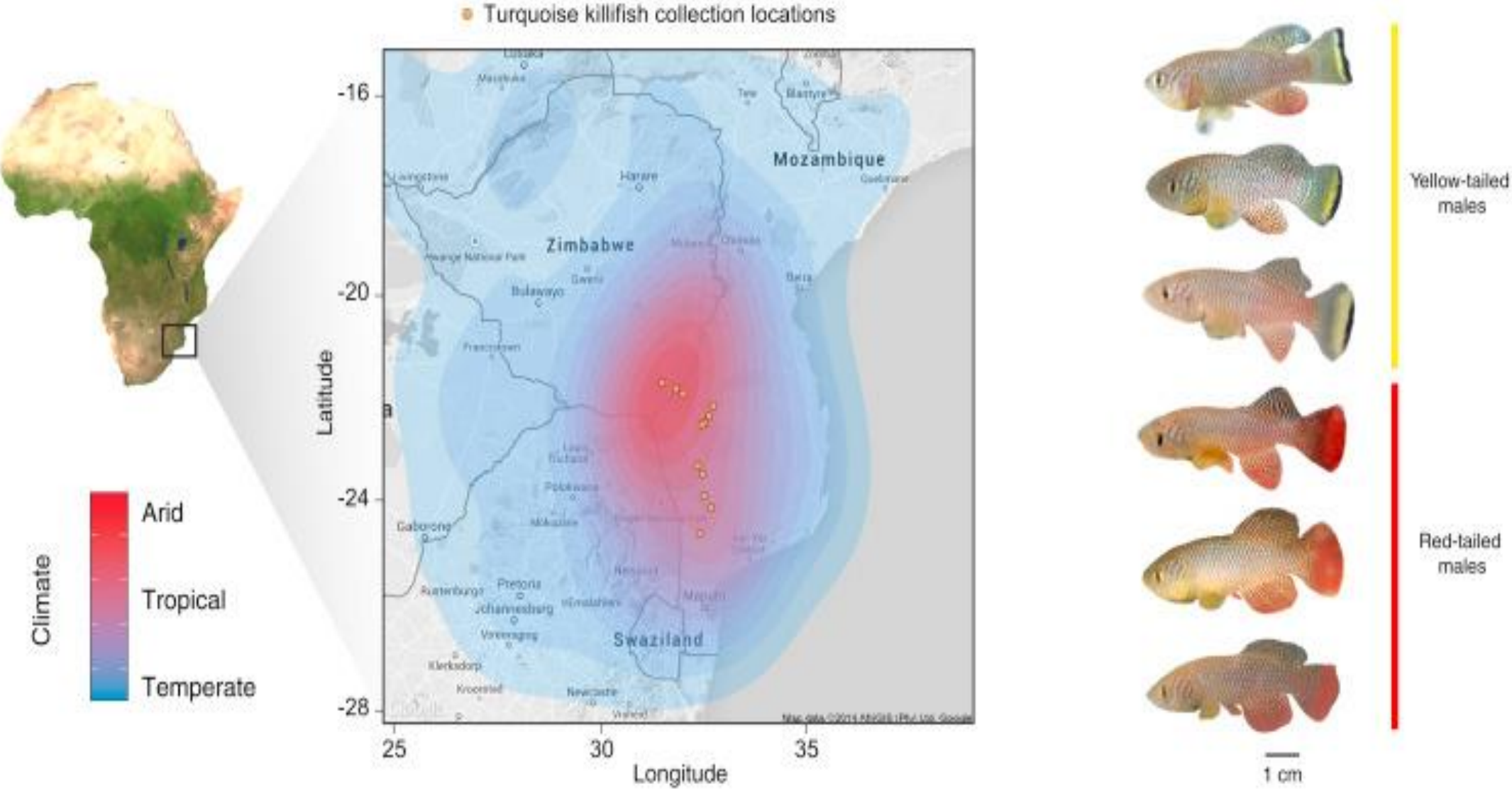
## Inspire Fish facility: where we are and where we go?



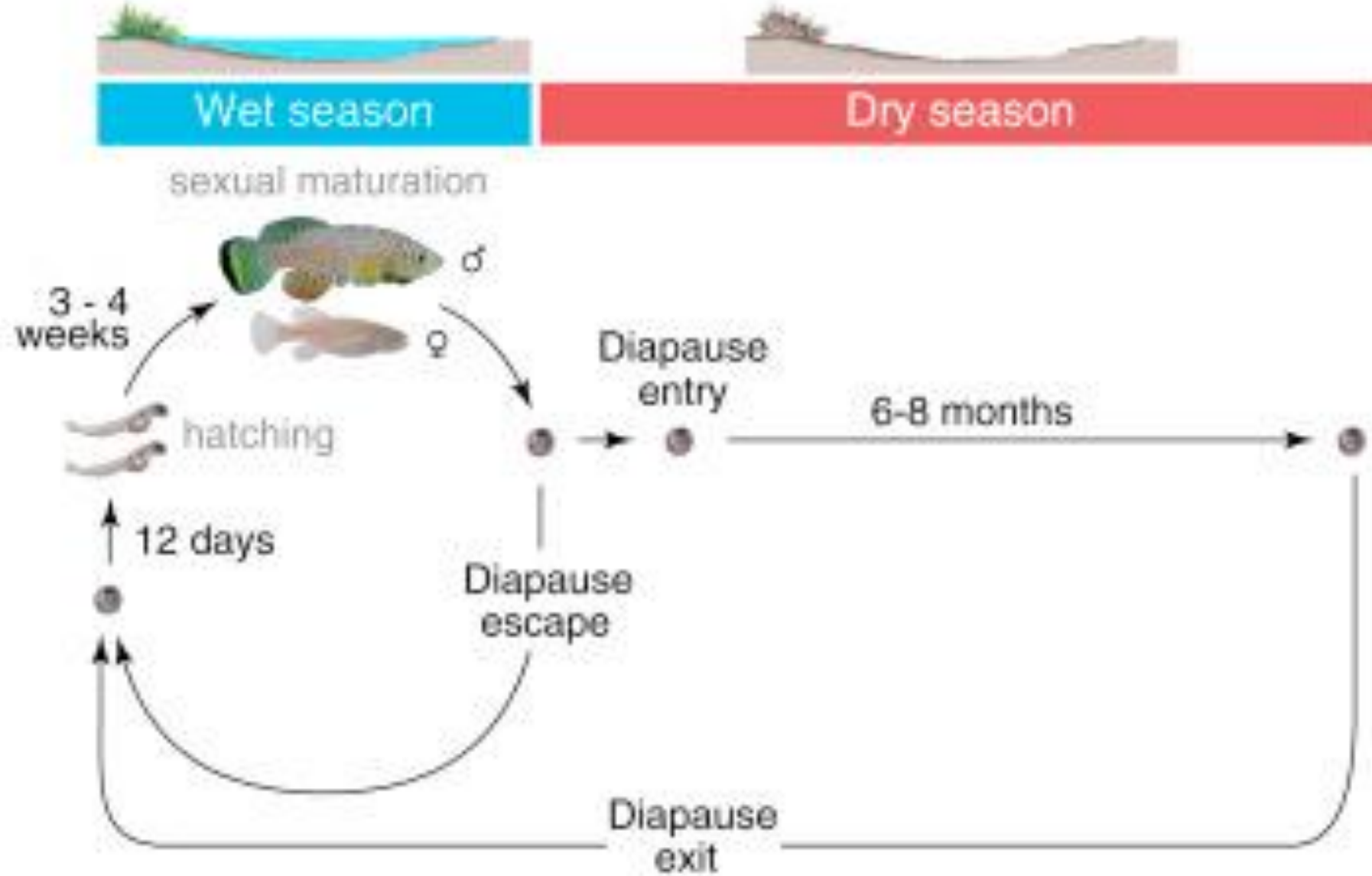
# African Killifish (*Nothobranchius furzeri*): a new and complete model of aging



# Natural habitats in South-East Africa



# The natural habitat drives the Killifish life cycle

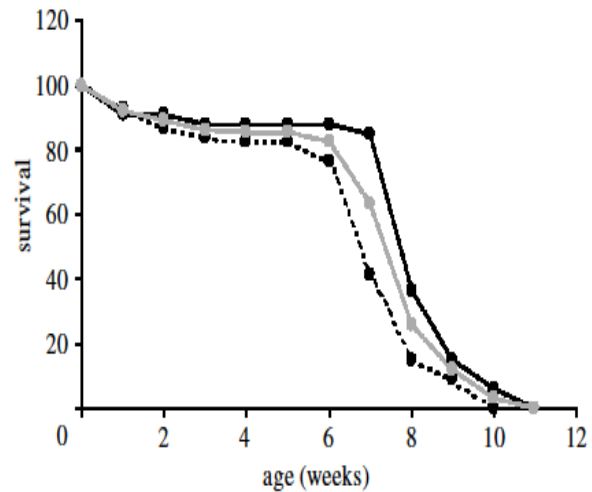


### MZM-0403 (long-lived)



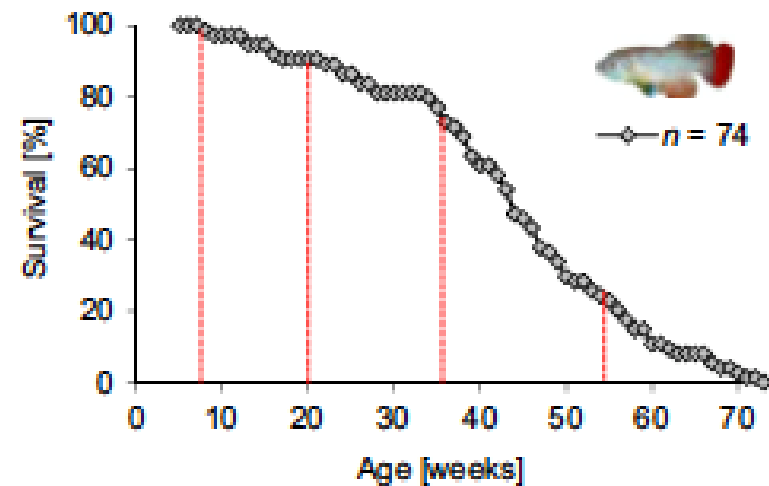
Trends in Genetics      Platzer M et al 2016

### GRZ (short-lived)



Valdesalici S et al 2003

### MZM-0403 (long-lived)

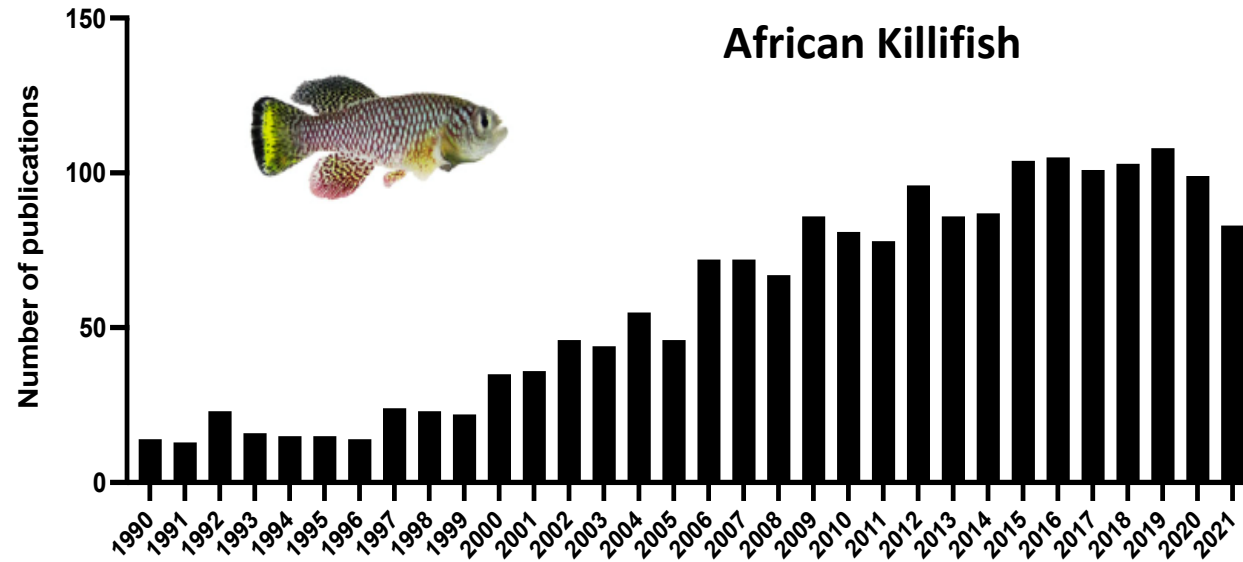


Wendler S et al 2015

# Killifish recapitulates the hallmarks of ageing



# Nothobranchius publications in outstanding journals



Cost



Efficiency



Transgenesis



Fast growth



Handling



Translation



Tissues/blood

# Killifish in Toulouse: the INSPIRE model of ageing

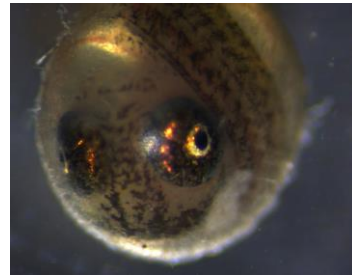
## Where we are?



A. Quillien



- 2019-2021: setting up the platform
- 5 racks: full capacity of 2000-3000 fishes (350 tanks)
- A complete autonomous filtration unit
- Home-made specific nutrition
- First killifish birth in Toulouse in 2021
- Expanding colonies
- Starting Biobanking in September 2021



Artemias



Bloodworms





# Biobanking and phenotyping



Memory  
Cognition



Microbiota



Regeneration  
Capacities

Locomotion

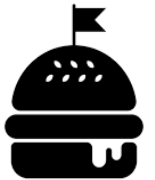


Heart  
Function

Hematopoiesis  
(Immune system)



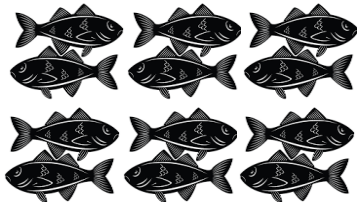
Metabolism  
(adipose tissue/SKM/  
Liver)



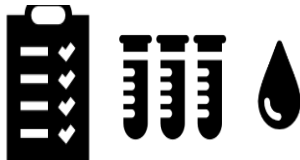
# Killifish in Toulouse: the INSPIRE model of ageing

## Where we (want to) go?

### Cohorte



### Tissue Collection (Biobanking)



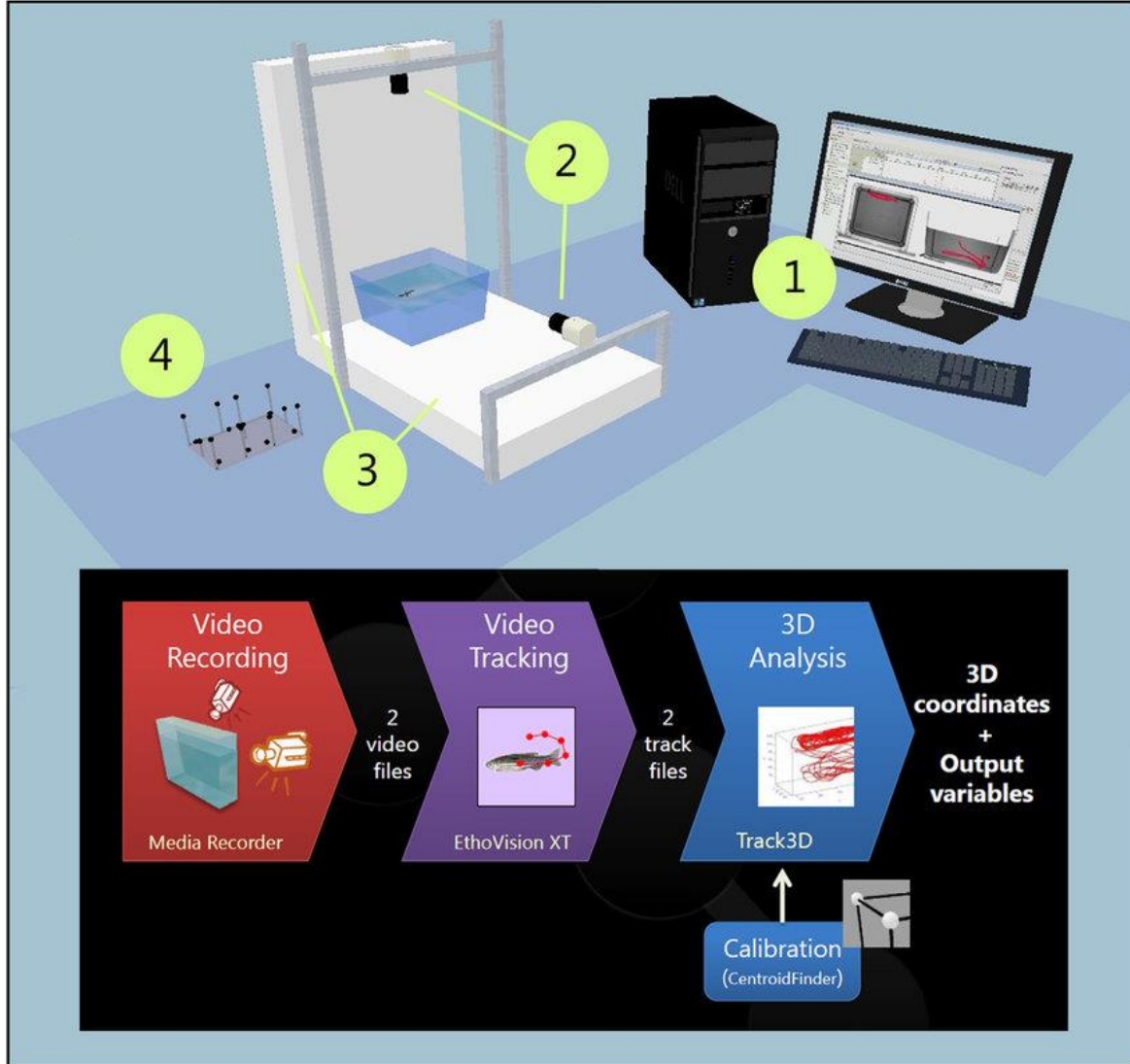
### Phenotyping



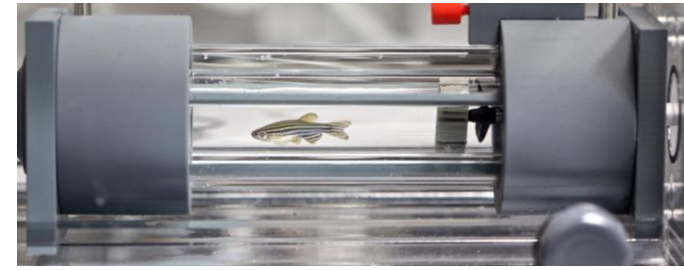


# Motricity/Locomotion

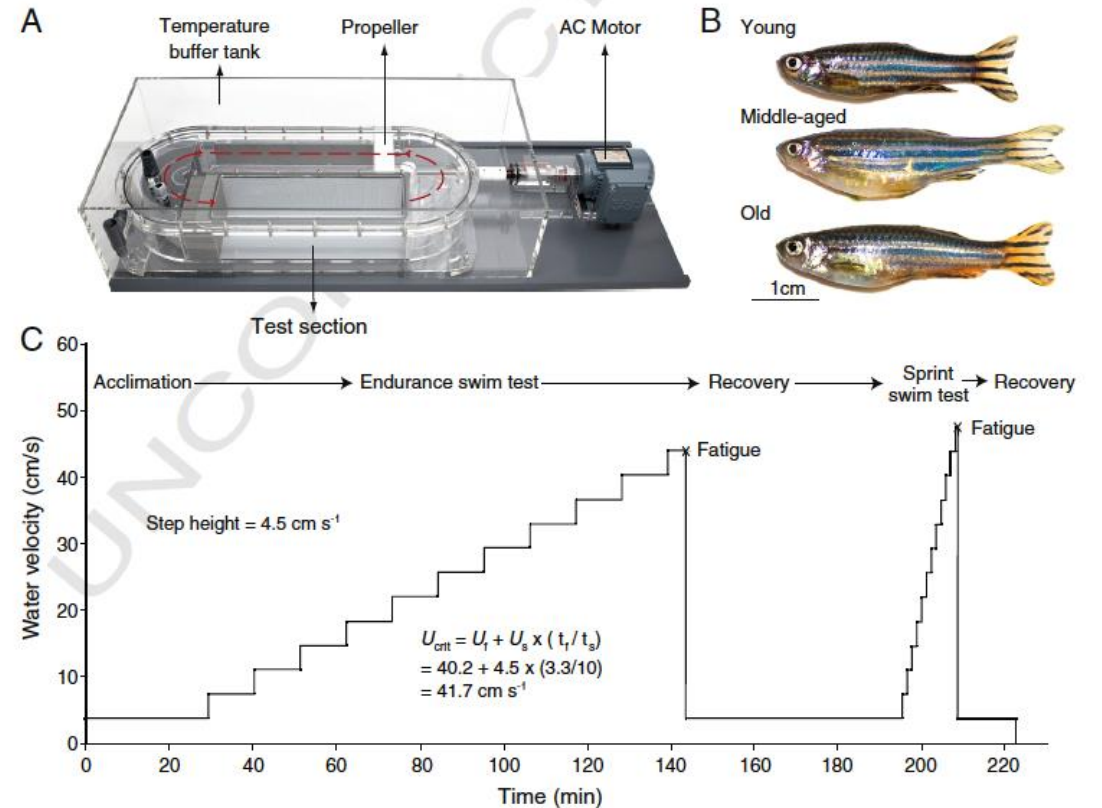
## Spontaneous activity



## Forced activity+ Gasometry

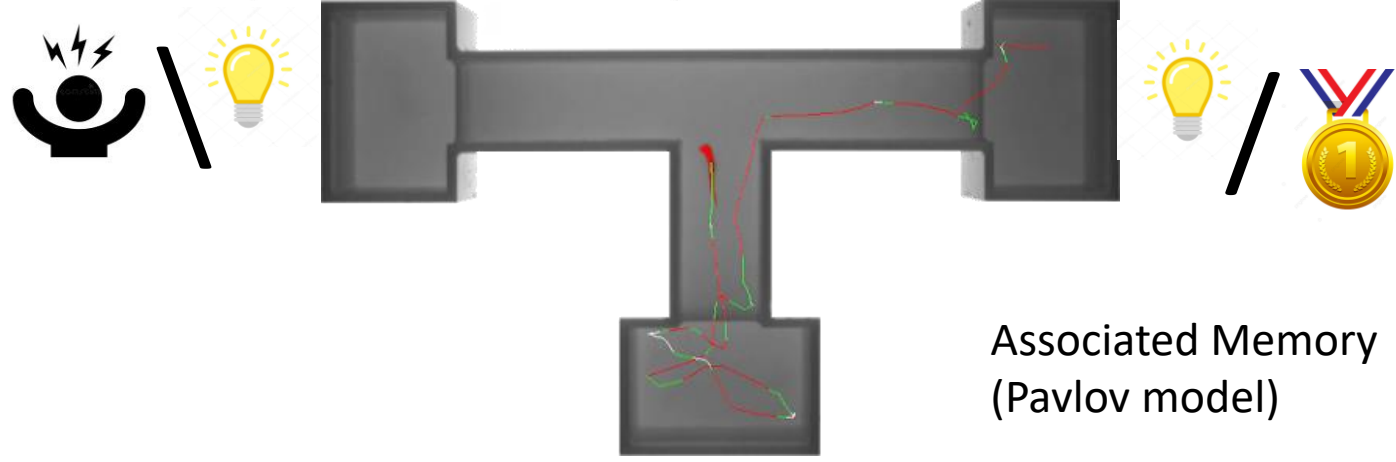
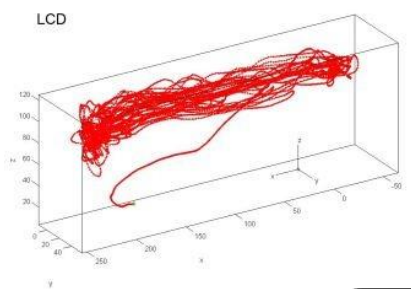
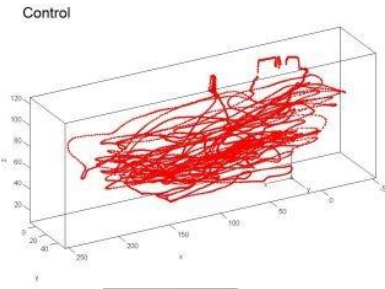
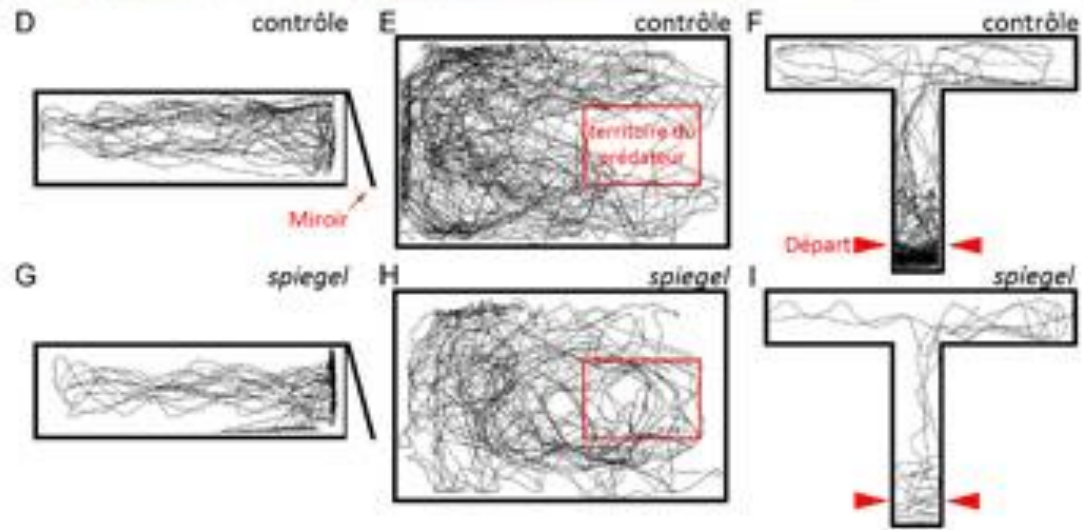
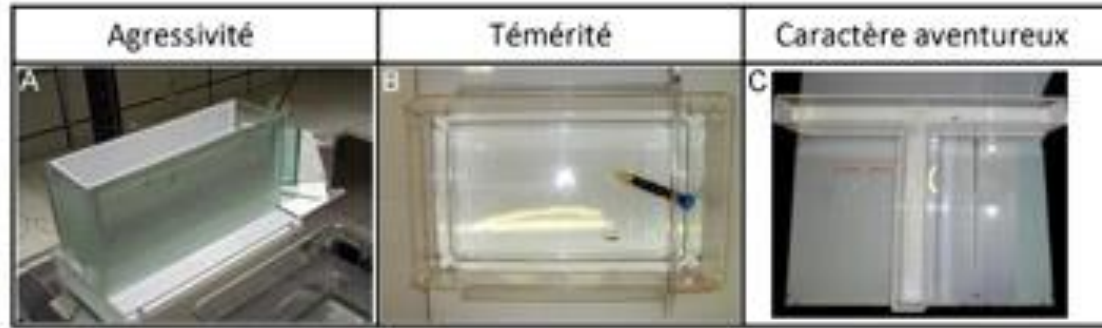
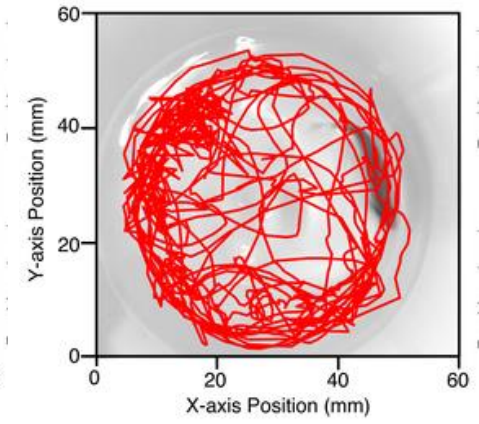
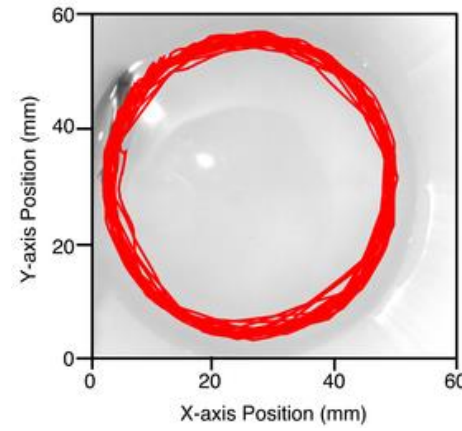
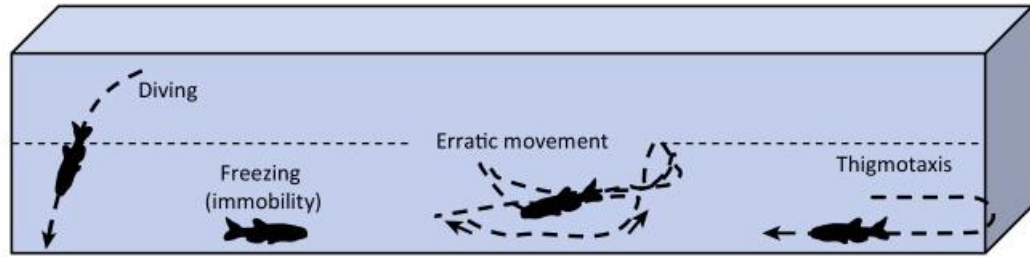


**O<sub>2</sub> & CO<sub>2</sub>  
Respirometry**



Adapted from MJH Gilbert et al 2014

# Behaviour/Memory/Cognition

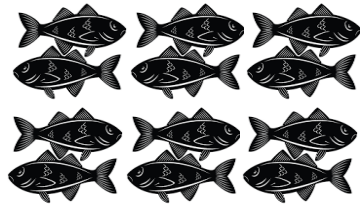


Associated Memory (Pavlov model)

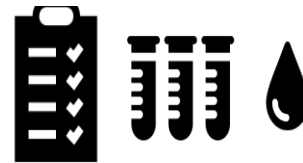
# Killifish in Toulouse: the INSPIRE model of ageing

## Where we (want to) go?

### Cohorte



### Tissue Collection (Biobanking)



### Phenotyping



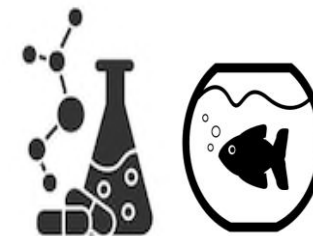
### Transgenesis



### Biosensors



### Screening



# Sarcofish: a powerful model to study sarcopenia

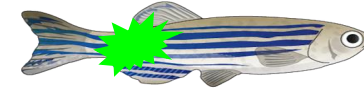
Role of « atrophy-related genes » (Atrogenin-1/MAFbx & Murf1/TRIM63)

**{Sarcopenia biosensor}:}**

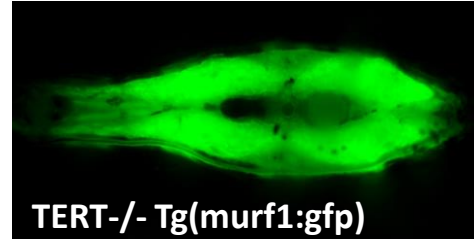
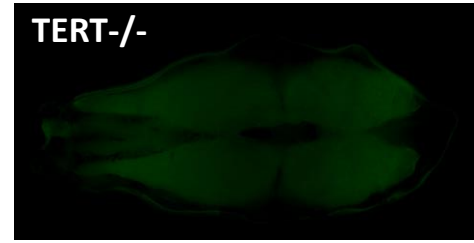
Tg{atro1:GFP}  
Tg{murf1:GFP}



ZBF young



ZBF aged



**(Model of sarcopenia):}**

Tg{ubi:Lox-STOP-Lox-Atro1}  
Tg{ubi:Lox-STOP-Lox-Murf1}  
x

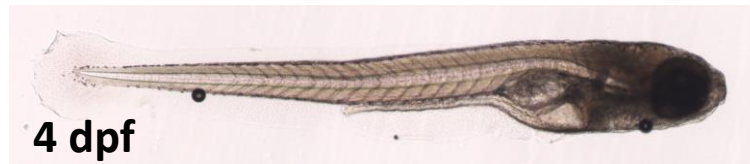


ZBF young

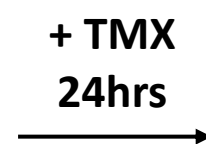


ZBF with genetic sarcopenia

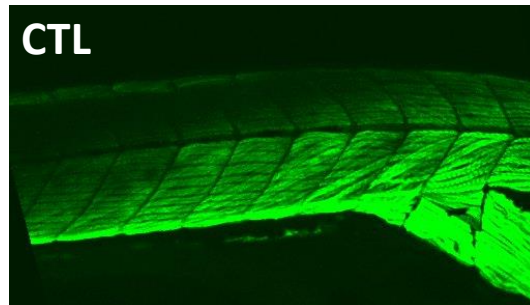
Tg{Unc503:CRE-ERT2}  
Tg{Acta1:CRE-ERT2}



4 dpf



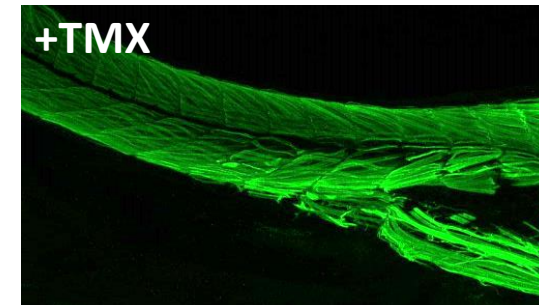
4 dpf



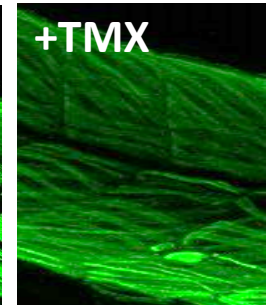
CTL



CTL



+TMX



+TMX

Tg({unc503:CRE-ERT2} {ubi:Lox-STOP-Lox-Atro1})

Tg({unc503:CRE-ERT2} {ubi:Lox-STOP-Lox-Atro1})

## Acknolegments



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**Philippe Valet**

**Armelle Yart**

**Marie Salèse**

**Odile Mondésert**

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**Alexandra Tyers**

**Itamar Arel (Jerusalem)**

**Gwendoline Astre**

**Romain Madeleine (MIBL-USA)**

**Marc Dubourdeau (Ambiotis)**

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