

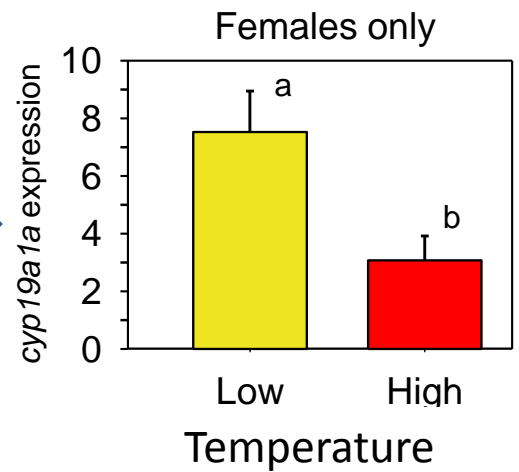
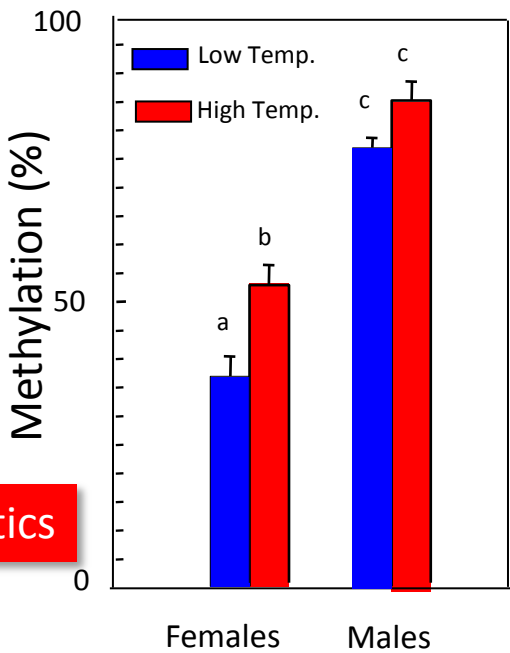
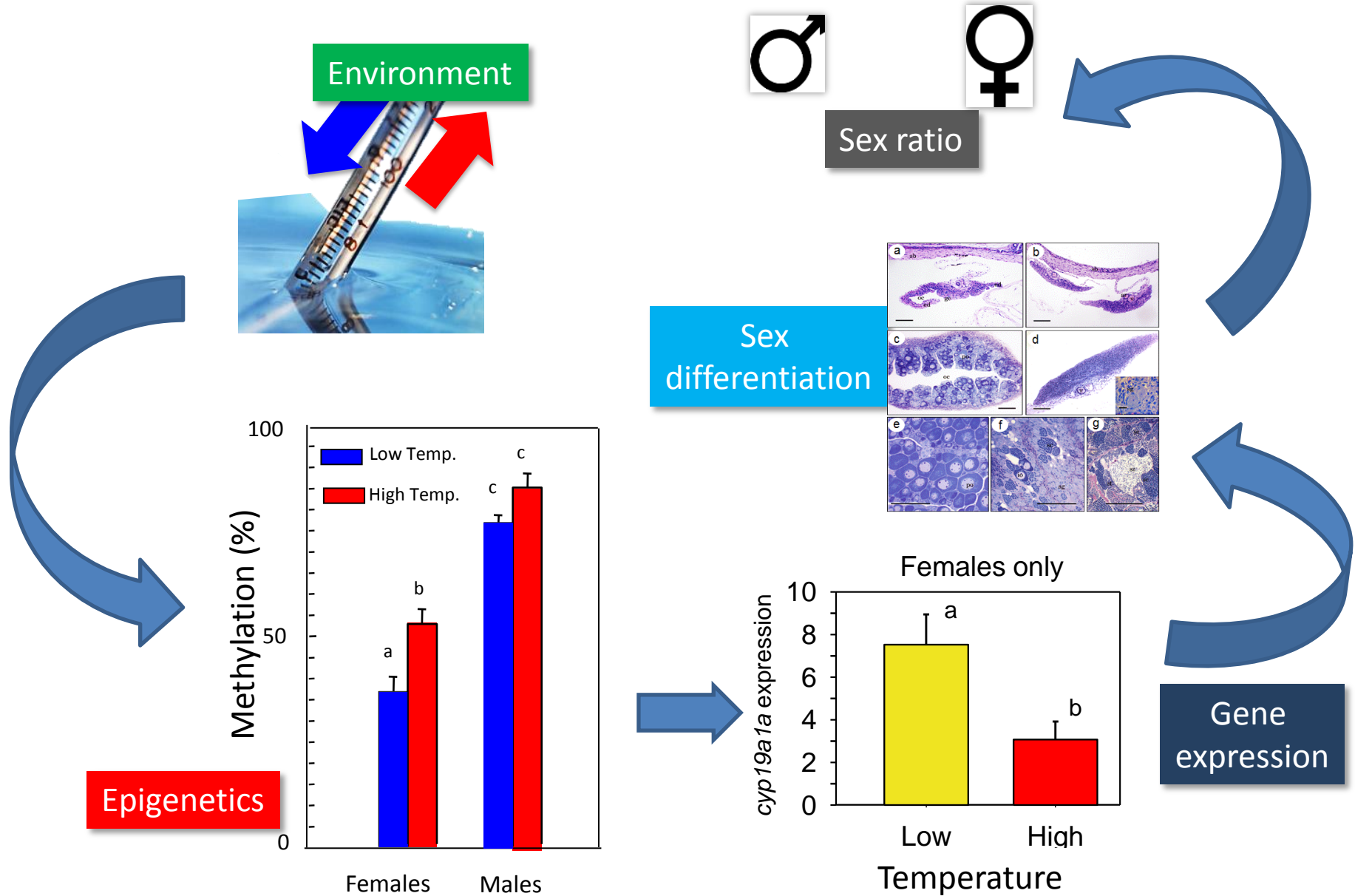


Francesc Piferrer  
Laia Ribas  
Dafni Anastasiadi  
Alejandro Valdivieso  
Susanna Pla  
Núria Sánchez

Institute of Marine Sciences  
Barcelona

## THERMAL INFLUENCES ON FISH SEXUAL DEVELOPMENT

# Epigenetics Integrates Genome and Environment



# Comparative Fish Sexual Development Transcriptomes



Turbot  
(*Scophthalmus maximus*)

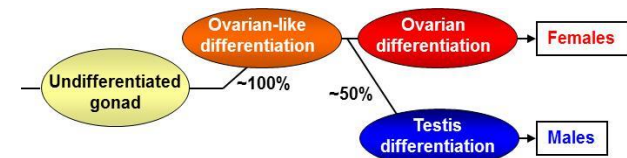
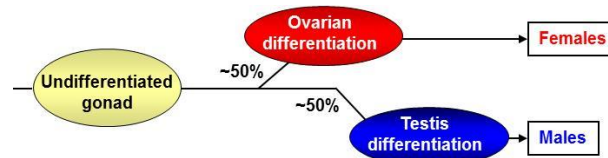


European sea bass  
(*Dicentrarchus labrax*)



Zebrafish  
(*Danio rerio*)

|                     |                     |                         |                  |
|---------------------|---------------------|-------------------------|------------------|
| Order               | Pleuronectiformes   | Perciformes             | Cypriniformes    |
| Habitat             | Saltwater           | Saltwater-Brackishwater | Freshwater       |
| Temperature range   | Cold                | Temperate               | Warm             |
| Use                 | Production          | Production              | Model            |
| Sex determination   | Chromosomal (ZW/ZZ) | Polygenic               | Polygenic        |
| Gonochoresitic type | Differentiated      | Differentiated          | Undifferentiated |

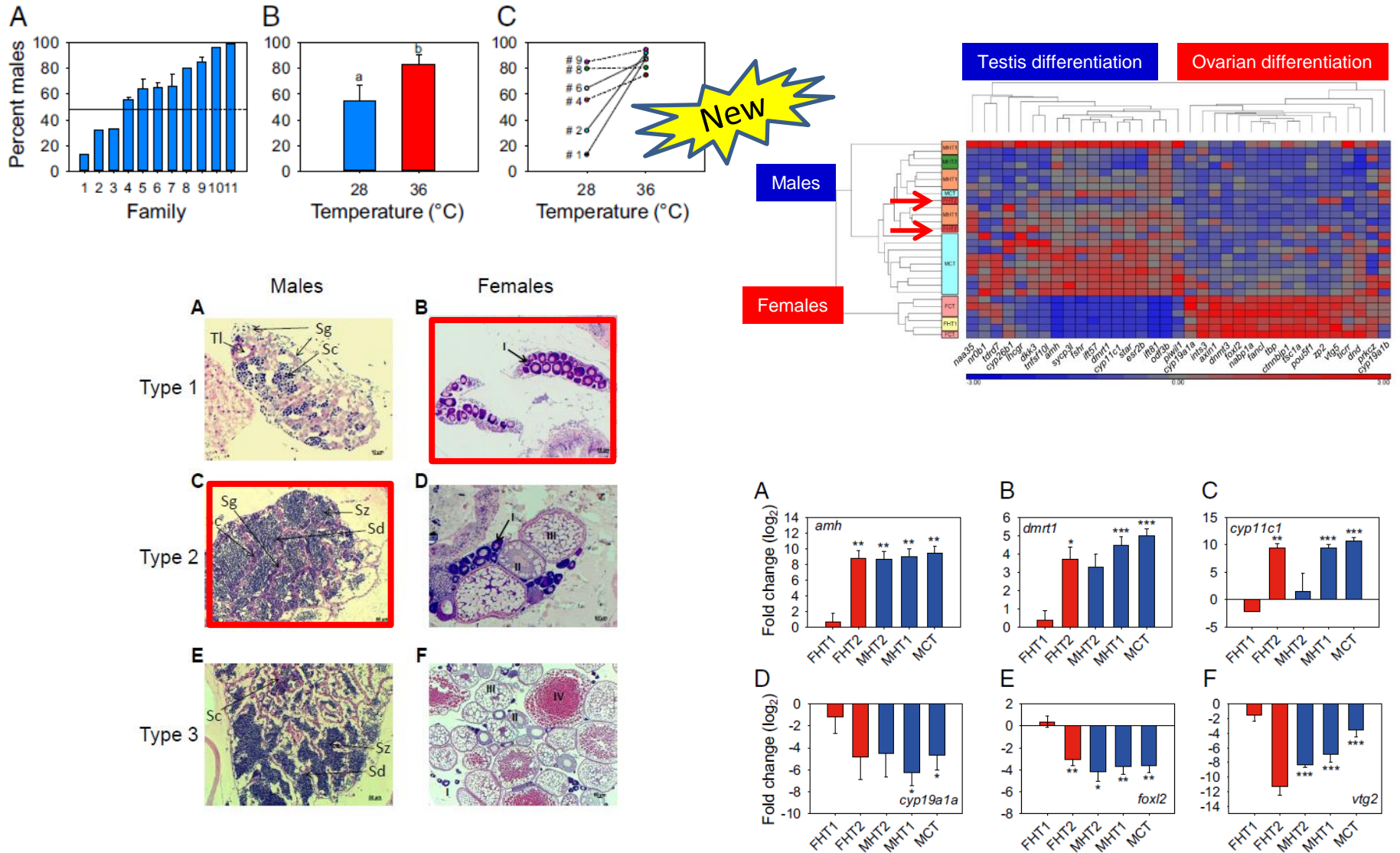


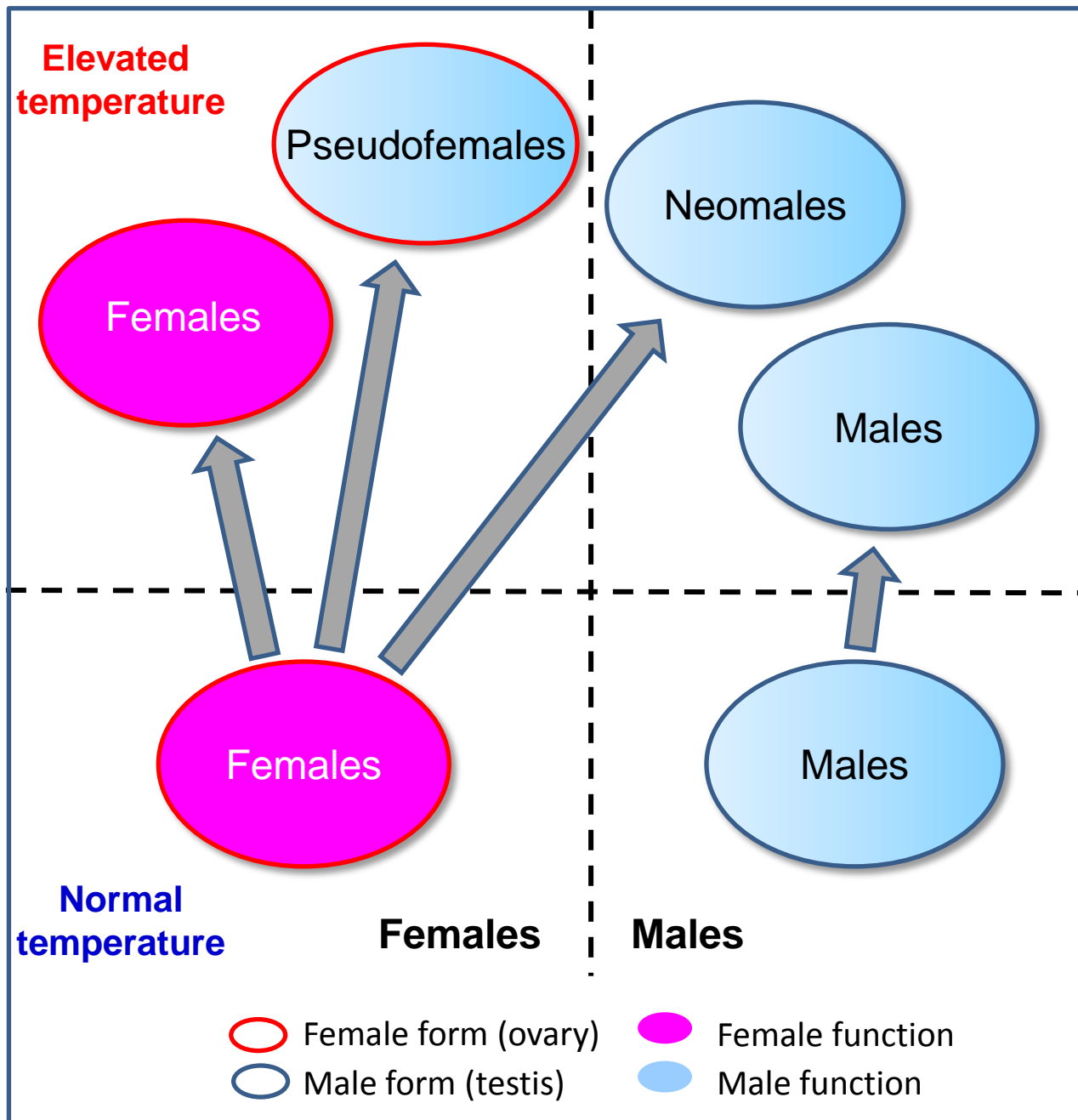
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Piferrer et al., 2005. Gen. Comp. Endocrinol.  
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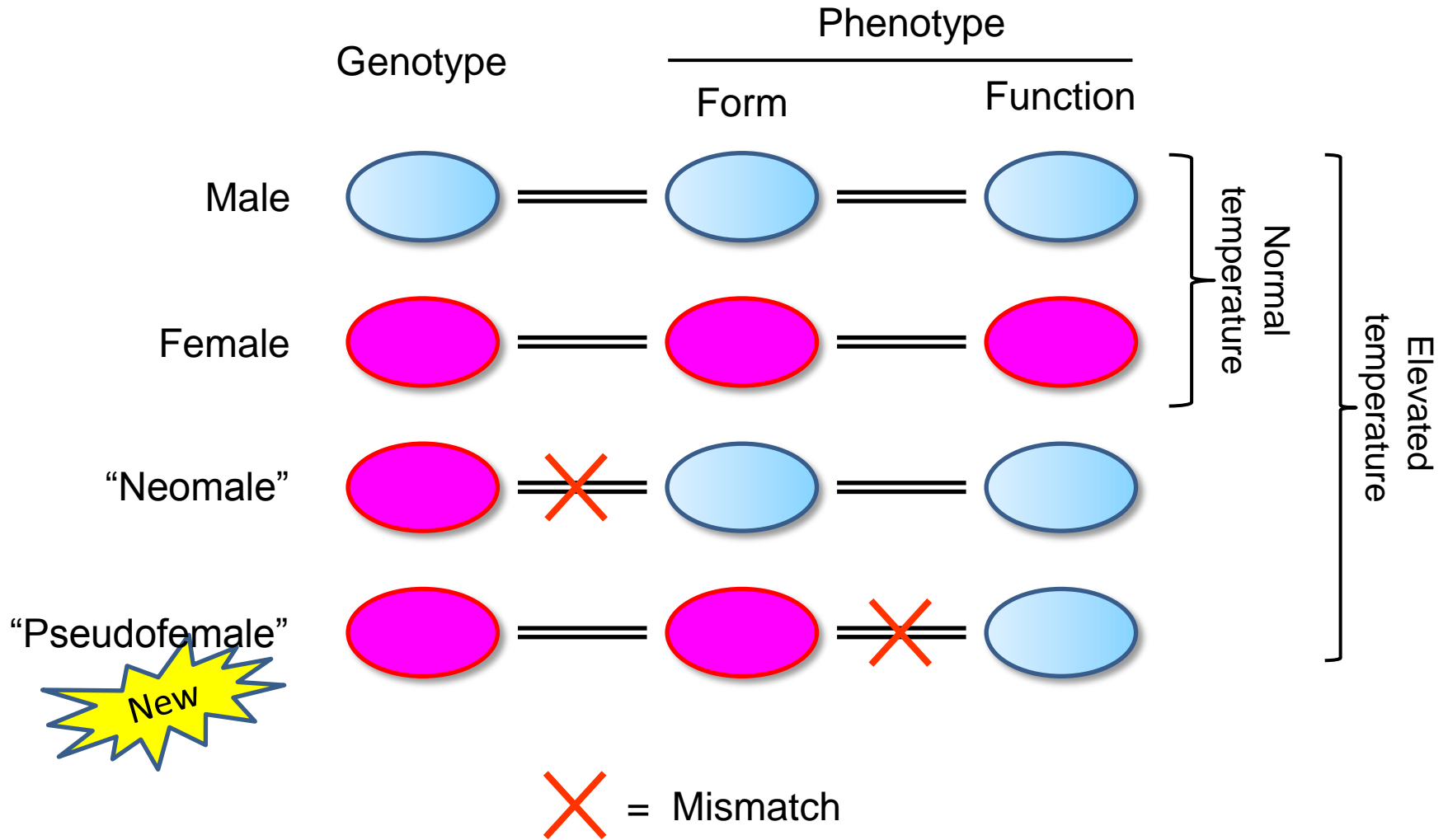
Orban et al., 2009. Mol. Cell. Endocrinol.  
Liew et al., 2012. PLoS ONE  
Ribas et al., 2017. PNAS.

# Heat-induced masculinization in domesticated zebrafish is family-specific and yields a set of different gonadal transcriptomes





# New Forms of Sexual Plasticity in Fishes



# Altered sex ratios in response to climate change—Who will fall into the (epigenetic) trap?

(Comment on DOI 10.1002/bies.201600058)

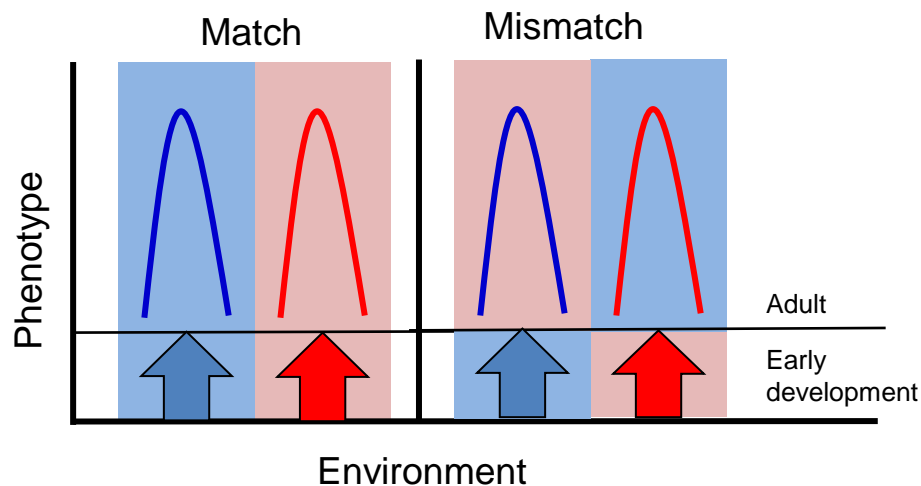
Francesc Piferrer

Bioessays (2016)

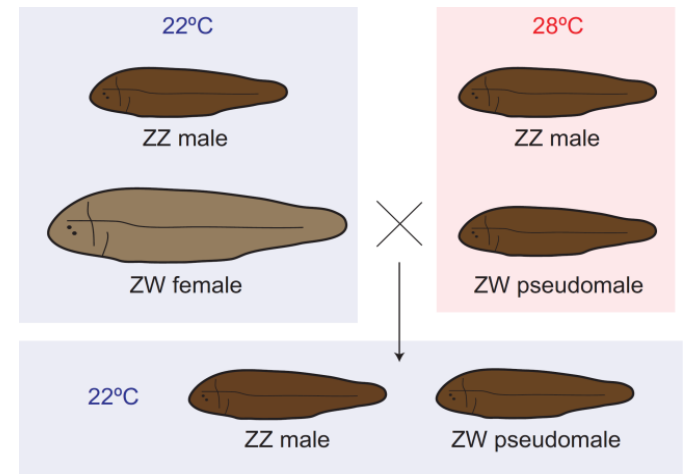
Idea to watch

**Epigenetic trap:** any epigenetic change that arises in response to novel environmental cues that produce maladaptive phenotypes

Nature



Culture



Shao et al. (2014). *Genom. Res.*



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Gemma Fuster, Technician



## Collaborators

- Laszlo Orban & Woei Chang Liew, Temasek Life Sciences Laboratory, Singapore
- John Poslethwait, Univ. Oregon
- Marc Vandeputte & Béatrice Chatain, IFREMER, Palavas-les-Flots, France
- Paulino Martínez & Ana Viñas, Univ. Santiago de Compostela, Lugo, Spain

Project **EpiMark**

