

Endocrine properties assessment of Chemicals, ingredients, & Products

LABORATOIRE
WATCHFROG



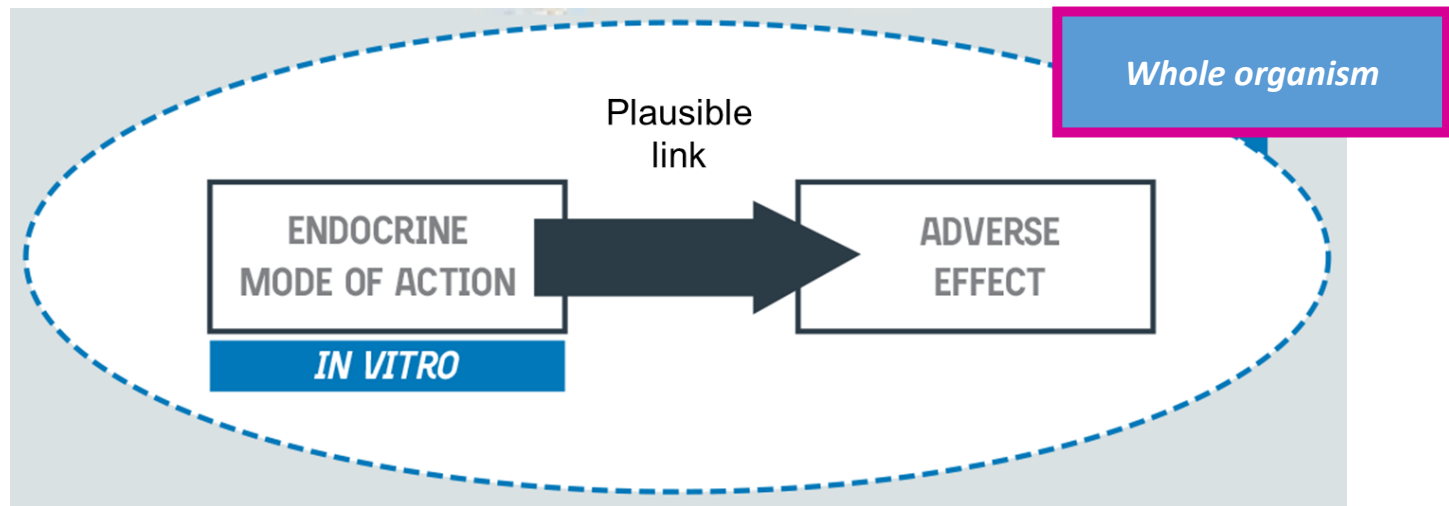
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Regulatory context on endocrine disruptors

European Parliament adopted WHO definition:

An exogenous substance or mixture that **alters function(s) of the endocrine system** and consequently causes **adverse health effects** in an intact organism, or its progeny, or (sub)populations (WHO/IPCS 2002).



OECD Guidance Doc 150 investigation levels

LEVEL 1

**EXISTING DATA
AND NON-TEST
INFORMATION**

LEVEL 2

**"IN VITRO"
ASSAYS**
providing data on
endocrine
mechanisms/
pathways.

LEVEL 3

**"IN VIVO"
ASSAYS**
providing data about
selected endocrine
mechanisms / pathways.
Some assays may also
provide some evidence
of adverse effects.

LEVEL 4

**"IN VIVO"
ASSAYS**
providing data on
adverse effects on
endocrine relevant
endpoints

LEVEL 5

**"IN VIVO"
ASSAYS**
providing more
comprehensive data
on adverse effects
on endocrine relevant
endpoints over extensive
parts of the life cycle
of the organism.

Cosmetic Compliant



Weight of evidence




An endocrine system *in vitro*

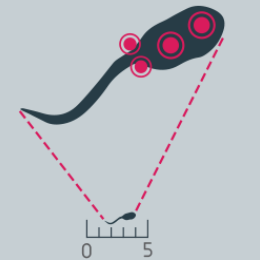
To test endocrine activity of ingredients, it requires a physiological *in vitro* solution:

- ✓ On early stages just hatched larvae
= **alternative method** to Replace (3Rs) laboratory animals
Compliant with European, Swiss and UK Ethical Rules
- ✓ On Whole organisms
= **Robust** results

A validated alternative to laboratory animal testing



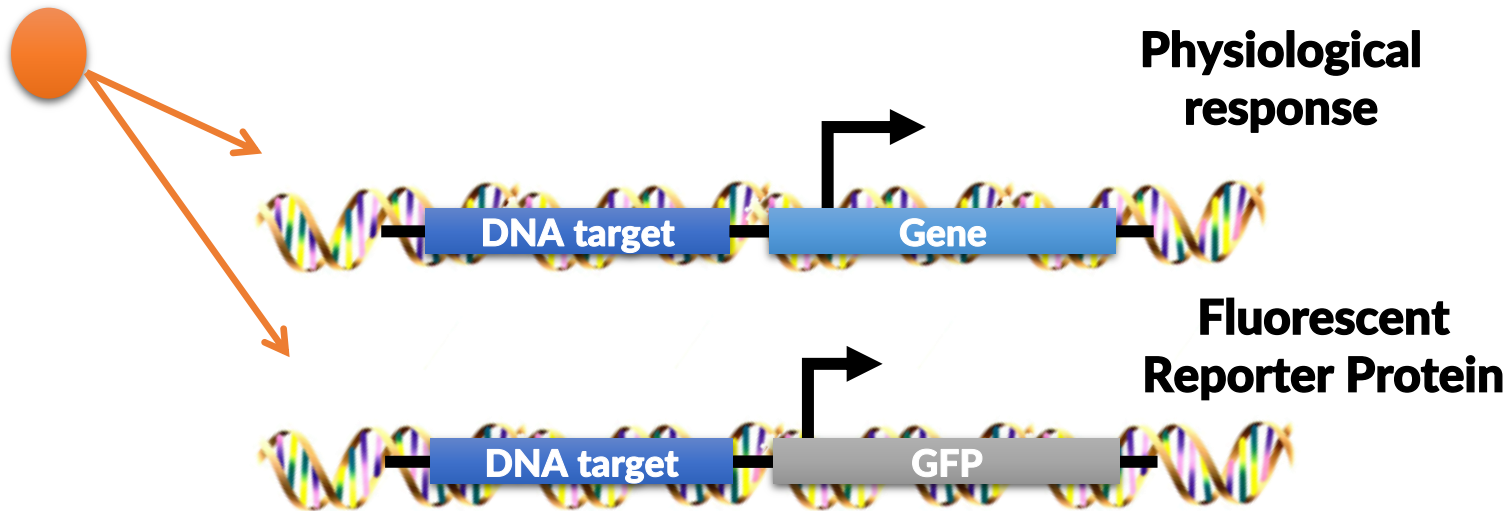
All of our tests use larvae and fry at "post-egg" stages (D0 to D4) which are prior to developmental stages considered as laboratory animals.



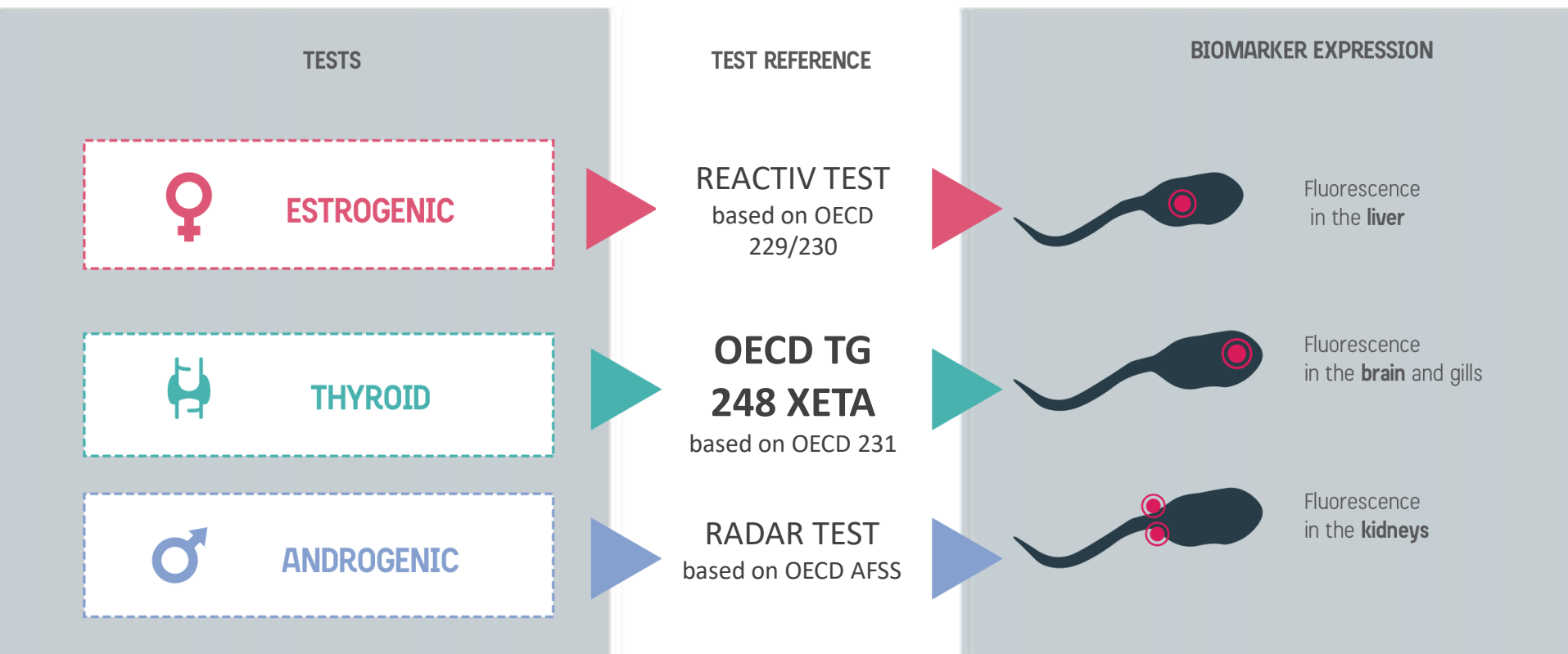
Actual scale in mm

Fluorescence reveals physiological pathway

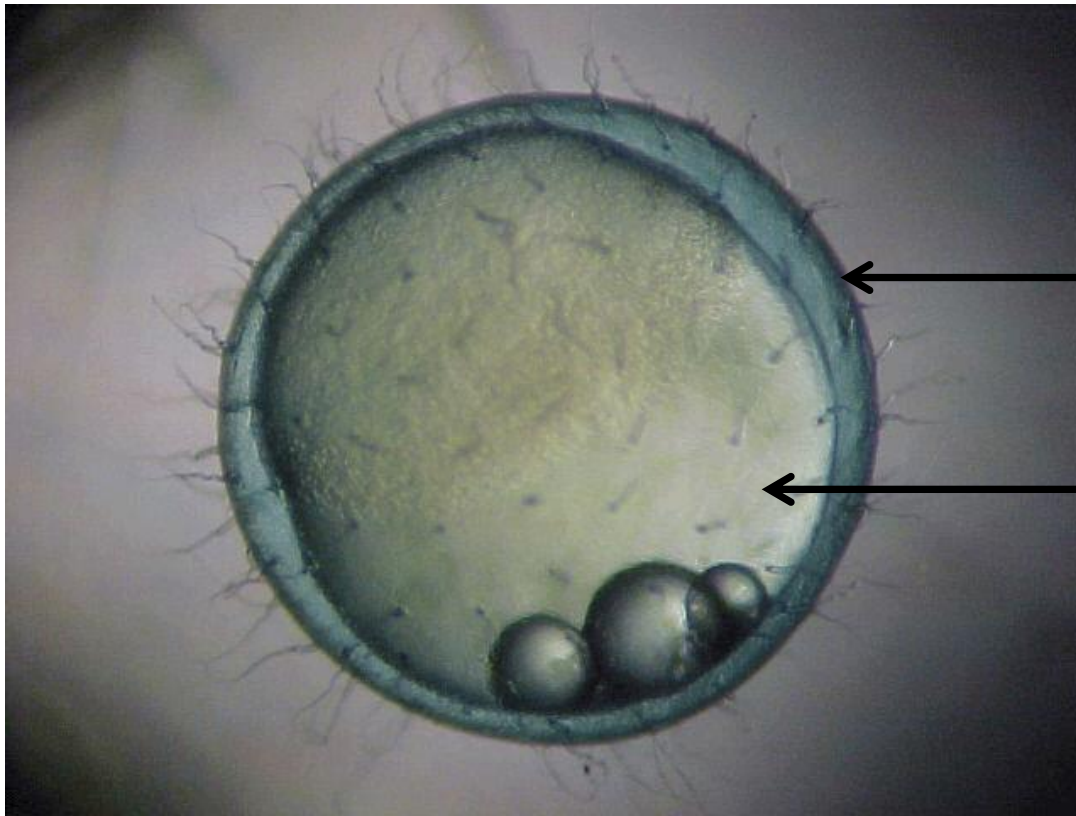
Hormone/ Chemical



Range of tests



Medaka eggs



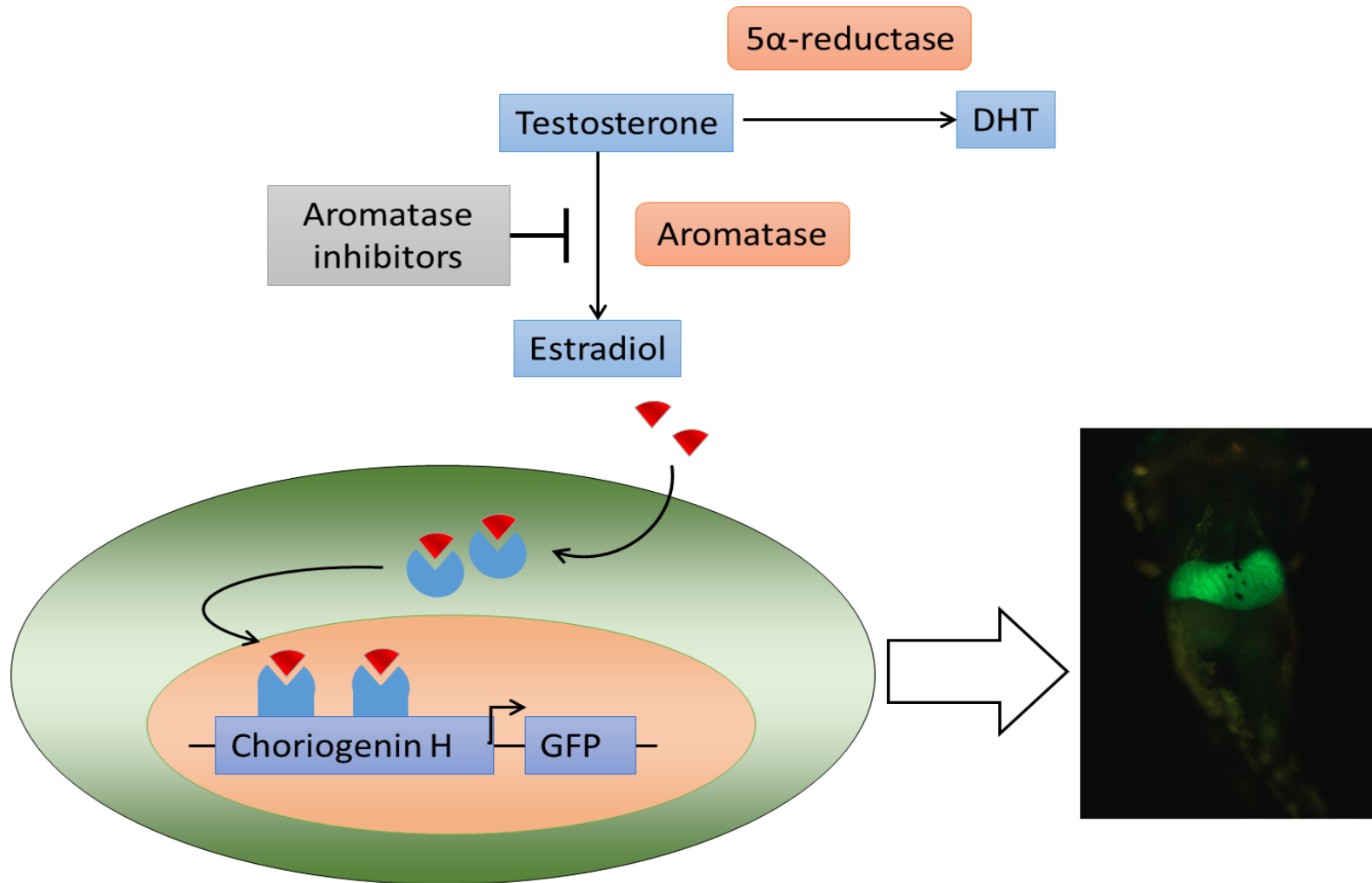
choriogenin

vitellogenin

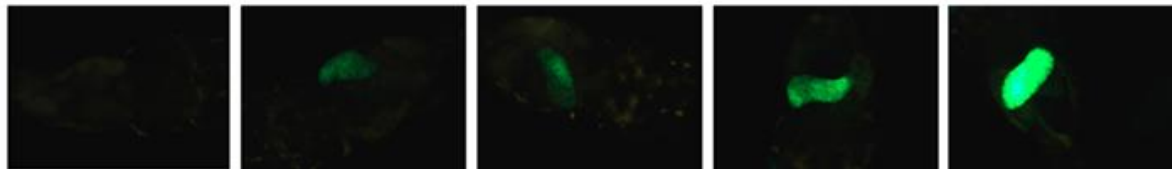
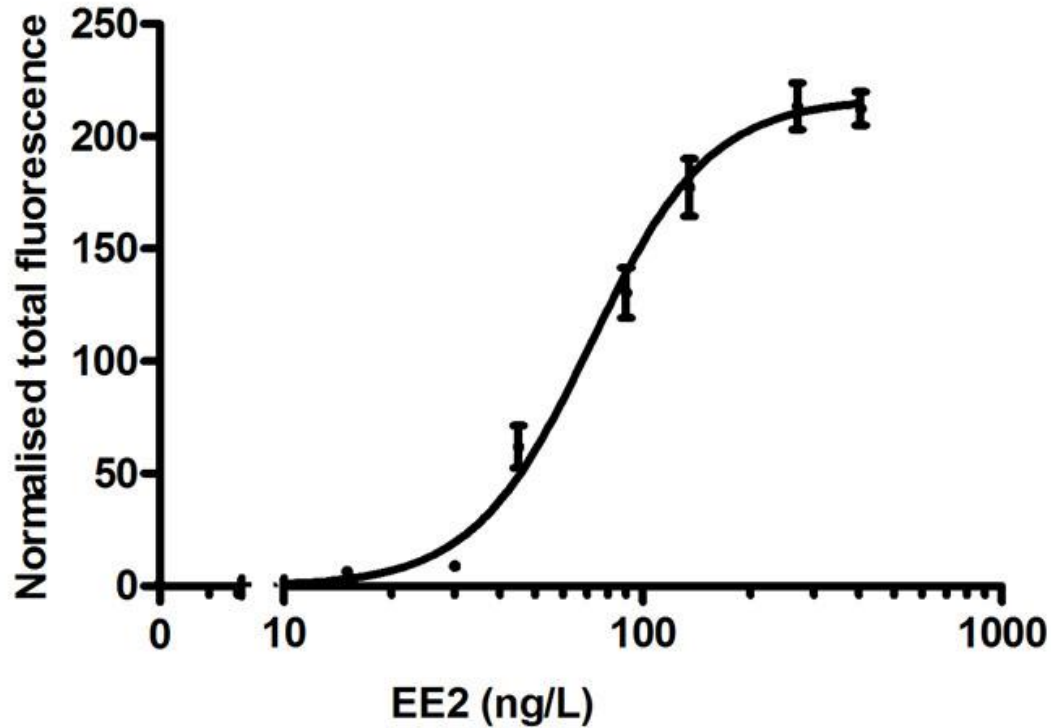
ChgH:

- Constituent protein of the egg envelope.
- Production induced by oestrogens.

Rapid Estrogen ACTivity *In Vivo* REACTIV assay



Concentration - Response with an estrogen



Testing strategies



- Chemicals, Ingredients (natural extract) vs Formula
- Packaging influence, food contact
- Hazard based: cover EATS modes of action
- Potency is useful in predictive / screening approach

L A B O R A T O I R E
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