Zebrafish as Animal Model for Ecotoxicity Investigation

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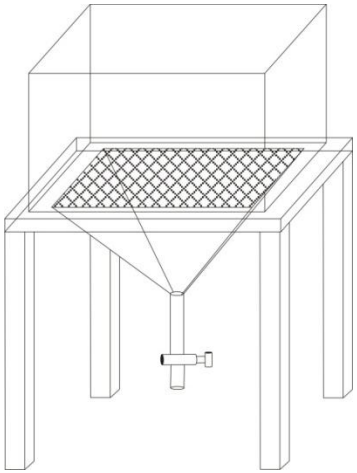
Why Zebrafish ?

- Small size, big value
  - Reduce space and husbandry cost
  - Require only low quantity of dosing
  - Allow high throughput screens
- Easy maintenance
- Transparency of embryos
  - Optical clarity
  - Broad potential in association with Fluorescence labelling
  - Possible unobstructed observations on later stage of life
  - High rate of survival
- Large number of offspring
  - Reach maturity in 3 months
  - Capable of laying 200-300 eggs in one morning
- Accessible to experimental manipulation

Experimental Procedure



Zebrafish
Egg collection

Fertilized egg screening

Fertilized egg distribution

Egg placement on Multiwell plates

Two eggs for every well
→2 wells for every group

Chemical addition on every wells

Chemical exposure

Microscopic observation on egg at 5 different period

1.5 hpf

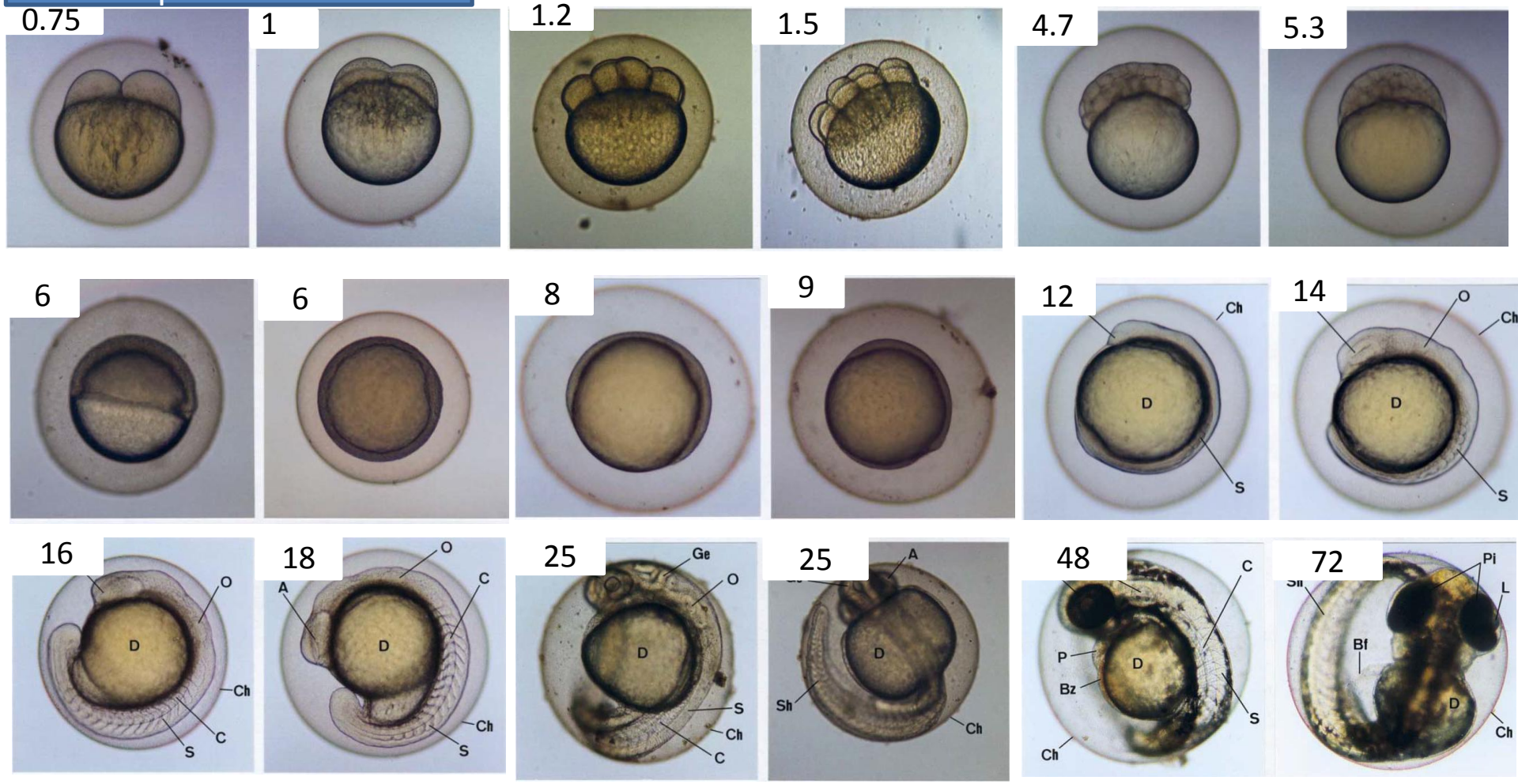
8 hpf

24 hpf

48 hpf

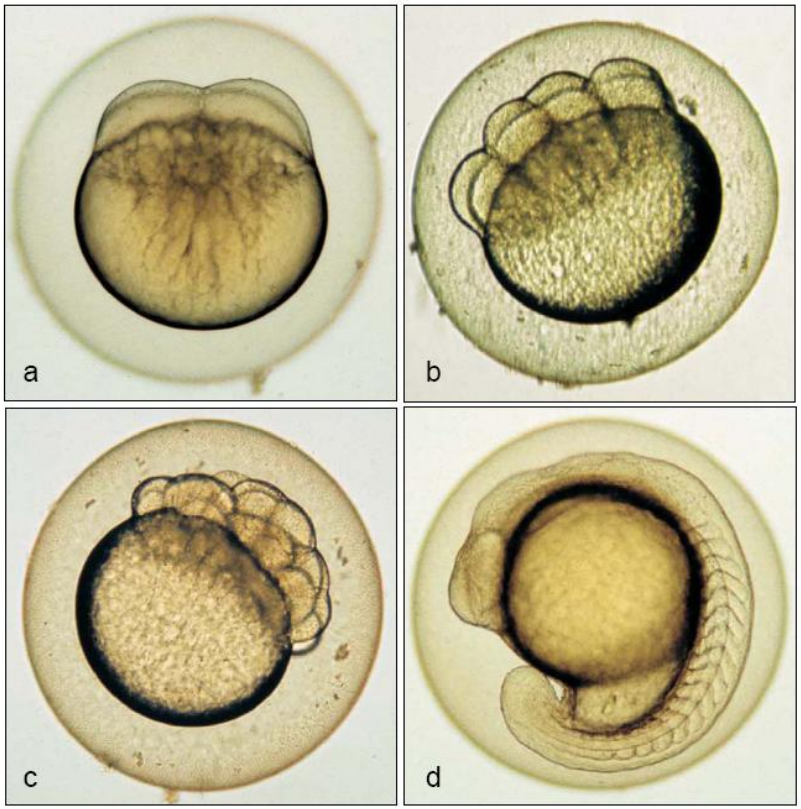
80 hpf

Hours post- fertilization



Toxicity Level Determination

- ✓ Coagulate/dead embryo
- ✓ Tail detachment
- ✓ Heartbeat
- ✓ Development delay
- ✓ Development of somites
- ✓ Spontaneous movement
- ✓ Development of somites
- ✓ Spontaneous movement
- ✓ Development of the eyes
- ✓ Development of the otolith
- ✓ Blood tail circulation
- ✓ Heart rate
- ✓ Edema (pericardial, yolk sac)
- ✓ Hatching
- ✓ Tail Malformation
- ✓ Length of tail



Example of egg malformation