

Normal Development of *Xenopus laevis*

by MOE and Environmental and Life Science Laboratory(ELSL), Towakagaku, Japan

About South African clawed frog, *Xenopus laevis*



male



female

History

Amphibians have been one of the most utilized vertebrates in studies of embryology, metamorphosis, and physiology. Especially, from 50-year before, *Xenopus laevis* has been well characterized with respect to their embryonic and larval development at both the cellular and molecular level. Moreover, concerning about the evaluation for environmental pollution, amphibians (including *Xenopus*) have been considered to be a sensitive and useful indicator, because they live both in water and on land, are vegetarians as the stage of larvae and carnivores as adults, and have permeable unprotected skin.

These situations indicate that *Xenopus laevis* can be a useful tetrapod model to assess possible hazardous chemicals for the living animals.

Feature

One is its permanently aquatic life style.

Two is its remarkably robust constitution: it is especially resistant to disease and infection.

Three is its life cycle, such that a embryo can be sexually reproducing adult in 1-1.5 years.

Conclusion

Xenopus laevis is very useful as test animal, not only for basic studies for the gene function and promoter regulation, but also for practical screening and studies for endocrine disruption.

Breeding conditions

Rearing of eggs and tadpoles to stage 47/48	
Duration	Approx. 12 days (until stage 47/48)
Culture system	Static renewal
Water temperature	22 ± 1 °C
Photoperiod	12:12 light dark cycle
Aeration	airstones
Tank volume	50L
Rearing water volume	40L
Frequency of exchanges of rearing water	Once per week
Food	Commercial fry food (sera micron)
Feeding regime	Daily from day 5 PF onwards
Rearing water	Reconstituted tap water medium

Rearing of tadpoles after stage 47/48	
Culture system	Static renewal
Water temperature	22 ± 1 °C
Photoperiod	12:12 light dark cycle
Aeration	airstones
Tank size	30x20x220cm
Rearing water volume	10L
Number of tadpoles per tank	30
Food	Commercial fry food (sera micron)

Measurement

- Growth (total length and tail weight)
- Developmental stage (based on Nieuwkoop and Faber(1956))
- Morphological photo
- Gonadal histology
- Thyroidal histology





















