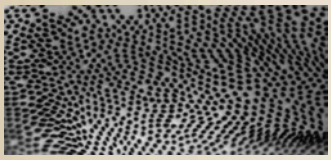
African Clawed Frogs

Xenopus laevis

University of Otago
Te Whare Wānanga o Otāgo
NEW ZEALAND

Xenopus laevis, the African Clawed Frog, is found in labs all over the world. They are different to the kind of frogs we see in the wild here in NZ, as they live entirely in water (aquatic) and have no tongues or visible ears.

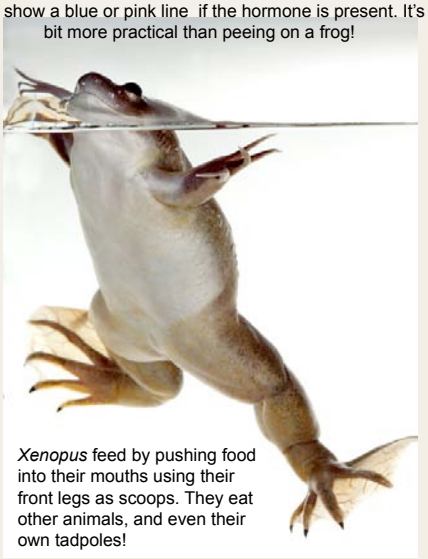


Did frogs invent velcro?
Male *Xenopus* have black coloured mating pads on the insides of their arms. If you look closely at this skin you can see that it is made up of thousands of hooks, all aligned in the same direction- just like velcro. The male uses his mating pads to cling tightly to the female during amplexus (mating)

Camo-frog!
Xenopus can change their appearance in tune with their background, getting darker or lighter to match the surroundings.

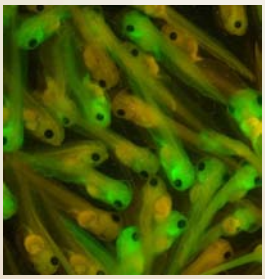
Want to know if you are expecting?
Female *Xenopus* frogs used to be used as a pregnancy test. A hormone found in only the urine of pregnant mothers can provoke an egg laying response in an adult female *Xenopus*. The same hormone is detected by today's pregnancy tests, which show a blue or pink line if the hormone is present. It's a bit more practical than peeing on a frog!

Bad rep?
Xenopus are often blamed for the extinction of other frog species. They may carry chitrid fungus, and so they must not be allowed to escape in NZ

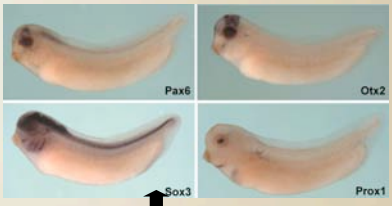


Xenopus feed by pushing food into their mouths using their front legs as scoops. They eat other animals, and even their own tadpoles!

Xenopus eggs are 1.4 mm in diameter and develop externally, so they are great for studying how embryos develop.



Regeneration sensation!
In the Zoology department, *Xenopus* are also used in the study of regeneration. Tadpoles, unlike humans, can grow back missing limbs, tails and parts of their eyes. Young frogs can partially grow back an arm, forming a spike rather than a hand. The frogs can use their spikes for feeding and male frogs even get new mating pads!



Colourful genes
We can also use *Xenopus* embryos to learn about how cells become different from one another during embryo development. For example, the above figure shows dark staining where 4 different genes involved in making the eye are active. We humans use the same genes to make our eyes.

Regeneration and Development Lab

Department of Zoology