

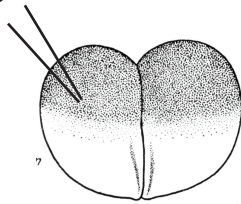
The drive to develop treatments and a cure for FSHD requires the ethical use of animals and FSHD-like models in research.



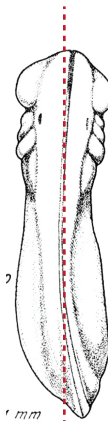
The first animals used to express DUX4 were African clawed frog (*X. laevis*) embryos and tadpoles. This work showed that even extremely low levels of DUX4 expression were catastrophic for vertebrate muscle development.

Wuebbles *et al.* (2010) Testing the effects of FSHD candidate gene expression in vertebrate muscle development. *International Journal of Clinical and Experimental Pathology* 3:386-400.

Inject mRNA into one side of a 2-cell embryo

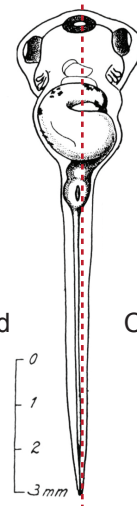


Control uninjected side



Injected

Control



Injected

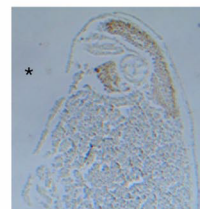
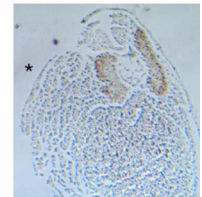
Control

Xenopus (and zebrafish) embryos can be injected at the two-cell (or later) stage and then allowed to develop to produce animals that are half affected and half unaffected controls.

12/101 Skeletal Muscle

Uninjected

Injected *



Very low levels of DUX4 destroy the developing musculature (brown) as shown by staining for the 12/101 skeletal muscle marker in tadpoles.