

Stage Name	Gosner Stage (G); Gosner, 1960	<i>M. fissipes</i> Stage (S); Wang et al., 2017	Xenopus Stage (NF); Nieuwkoop and Faber, 1956	Trait description	
				Other anurans	Xenopus
Fertilized egg	1	1	1	Animal pole was rotated upward from random initial orientations	
Appearance of gray crescent	2	2	1	A lightening (grey crescent) appears on part of the pigmented hemisphere opposite the point of sperm penetration	
First cleavage (2 cells)	3	3	2		
Second cleavage (4 cells)	4	4	3		
Third cleavage (8 cells)	5	5	4	Different cells were formed by cleavage, such as 2 cells, 4 cells, 8 cells, 16 cells, and 32 cells	
Forth cleavage (16 cells)	6	6	5		
Fifth cleavage (32 cells)	7	7	6		
Early blastula	8	8-9	7	Cell size gets smaller	
Late blastula	9	10	8	Boundaries between cells became blurry, creating a smooth surface	
Appearance of blastoporic lip	10	11	9	Invagination was initiated in the vegetal hemisphere cells	
Mid-gastrula	11	12-13	10	Formation of circular blastopore	
Late-gastrula	12	14	11-13	Yolk plug became smaller	
Neural plate	13	15	14	Yolk plug was disappeared, a horseshoe-shaped embryo was formed	
Neural folds	14	16	15-17	Neural groove became distinct	
Rotation (Closure of neural fold)	15	17	18	Neural fold merged into the whole trunk	
Neural tube	16	18	19-21	Embryo elongation, two lateral ridges elevation and separated by the neural groove	
Tail bud	17	19	22-25	Tail bud appears and develops	
Muscular response	18	20-21	26-32	Both dorsal and ventral portions of the tail fin appeared	
Heart beats	19	22	33-34	Appearance of gill bud, formation of the optic vesicles on both sides of the head; heartbeats is detectable	
Gill circulation	20	23	35-36	Optic vesicles are distinct, individuals prefer to lie on the bottom	
Cornea transparent	21	23-24	37-38	Development of the gills, appearance and stretching of the gills	
Tail fin circulation	22	24	39-41	Fins become transparent, blood circulation in the tails begins	
Operculum development I	23	25	42		
Operculum development II	24	26	44	Development of the operculum and disappearance of external gills	
Operculum development III	25	27-28	45	Onset of feeding and free-swimming tadpole stage	