

This material is from the 4th edition of The Zebrafish Book. The 5th edition is available [in print](#) and within the [ZFIN Protocol Wiki](#).

Zebrafish Developmental Staging Series

Embryonic stages are modified from [Kimmel et al., 1995. Developmental Dynamics 203:253-310](#). Copyright ©1995 Wiley-Liss, Inc. Reprinted only by permission of Wiley-Liss, a subsidiary of John Wiley & Sons, Inc.

Select a stage name below to get a detailed description and images. You can also browse the zebrafish [Anatomical Ontology](#) (AO) to show anatomical terms that are present at that stage.

(h = hours of development at 28.5°C)

Period	Stage	Begins	Developmental Landmarks	Anatomy
Zygote (0 - 0.75 h)	1-cell	0.00 h	Cytoplasm streams toward animal pole to form blastodisc	Browse AO
Cleavage (0.75 - 2.25 h)	2-cell	0.75 h	Partial cleavage	Browse AO
	4-cell	1.00 h	2 X 2 array of blastomeres	Browse AO
	8-cell	1.25 h	2 X 4 array of blastomeres	Browse AO
	16-cell	1.50 h	4 X 4 array of blastomeres	Browse AO
	32-cell	1.75 h	4 X 8 array of blastomeres	Browse AO
	64-cell	2.00 h	3 regular tiers of blastomeres	Browse AO
Blastula (2.25 - 5.25 h)	128-cell	2.25 h	5 blastomere tiers; cleavage planes irregular	Browse AO
	256-cell	2.50 h	7 blastomere tiers	Browse AO
	512-cell	2.75 h	9 blastomere tiers; YSL forms	Browse AO
	1k-cell	3.00 h	11 blastomere tiers; single row of YSL nuclei; asynchronous cell cycle	Browse AO
	High	3.33 h	> 11 blastomere tiers; blastodisc flattening begins; YSL nuclei in two rows	Browse AO
	Oblong	3.66 h	Blastodisc flattening; multiple rows of YSL nuclei	Browse AO
	Sphere	4.00 h	Spherical shape; flat border between blastodisc and yolk	Browse AO
	Dome	4.33 h	Yolk cell bulging toward animal pole as e begins	

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Gastrula (5.25 - 10.33 h)	30%-epiboly	4.66 h	Blastoderm an inverted cup of uniform thickness	Browse AO
	50%-epiboly	5.25 h	Blastoderm remains of uniform thickness	Browse AO
	Germ-ring	5.66 h	Germ ring visible from animal pole; 50%-epiboly	Browse AO
	Shield	6.00 h	Embryonic shield visible from animal pole; 50%-epiboly	Browse AO
	75%-epiboly	8.00 h	Dorsal side distinctly thicker; epiblast, hypoblast, evacuation zone visible	Browse AO
	90%-epiboly	9.00 h	Axis and neural plate; brain and notochord rudiments	Browse AO
Segmentation (10.33 - 24 h)	Bud	10.00 h	Tail bud prominent; early polster; 100%-epiboly	Browse AO
	1-4 somites	10.33 h	First somite furrow	Browse AO
	5-9 somites	11.66 h	Polster prominent; optic vesicle, Kupffer's vesicle, neural keel	Browse AO
	10-13 somites	14 h	Pronephros forms	Browse AO
	14-19 somites	16 h	EL (embryo length) = 0.9 mm; otic placode, brain neuromeres	Browse AO
	20-25 somites	19 h	EL = 1.4 mm; lens, otic vesicle, hindbrain neuromeres	Browse AO
Pharyngula (24 - 48 h)	26+ somites	22 h	EL = 1.6 mm; blood islands, otoliths, midbrain-hindbrain boundary	Browse AO
	Prim-5	24 h	EL = 1.9 mm; early pigmentation, heartbeat	Browse AO
	Prim-15	30 h	EL = 2.5 mm; early touch reflex, retina pigmented	Browse AO
	Prim-25	36 h	EL = 2.7 mm; early motility, tail pigmentation	Browse AO
Hatching (48 - 72 h)	High-pec	42 h	EL = 2.9 mm; rudiments of pectoral fins	Browse AO
	Long-pec	48 h	EL = 3.1 mm; elongated pectoral fin buds	Browse AO
	Pec-fin	60 h	EL = 3.3 mm; pectoral fin blades	Browse AO
Larval	Protruding-mouth	72 h	3.5 mm total body length	Browse AO
	Day 4	96 h	3.7 mm total body length	Browse AO
	Day 5	120 h	3.9 mm total body length; 6 teeth	Browse AO

[Browse](#)

	Day 6	144 h	4.2 mm total body length	AO
	Days 7-13	168 h	4.5 mm total body length; 8 teeth	Browse AO
	Days 14-20	14 d	6.2 mm total body length; 10 teeth	Browse AO
	Days 21-29	21 d	7.8 mm total body length	Browse AO
Juvenile	Days 30-44	30 d	10 mm total body length; adult fins/pigment	Browse AO
	Days 45-89	45 d	14 mm total body length; 12 teeth	Browse AO
Adult (90 d - 2 y)	90 d	Breeding adult		Browse AO
Unknown	Stage yet to be determined.			



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Morgan, J.D. et al. Hearing capabilities differ between

