





























Developmental Stages until hatching larva in *Ciona intestinalis* (Hotta et al., 2007)

Periods of embryogenesis	Stage Name		Images	22°C	20°C	18°C	16°C
I. Zygote period	St. 1	1 cell		0min	0min	0min	0min
II. Cleavage period	St. 2	2 cell		1hr	1hr	1hr	75min
	St. 3	4 cell		84min	87min	87min	1hr 40min
	St. 4	8 cell		1hr 39min	1hr 51min	1hr 54min	2hr 15min
	St. 5a	early 16 cell		2hr 3min	2hr 15min	2hr 21min	2hr 39min
	St. 5b	late 16 cell		2hr 16min	2hr 33min	2hr 39min	3hr
	St. 6-a	early 32 cell		2hr 36min	2hr 47min	3hr 6min	3hr 27min
	St. 6-b	late 32 cell		2hr 45min	2hr 57min	3hr 12min	3hr 39min
	St. 7	44 cell			3hr 9min	3hr 21min	
	St. 8	64 cell		3hr 27min		4hr	4hr 27min
	St. 9	76 cell		3hr 51min		4hr 12min	4hr 39min
III. Gastrula Period	St. 10	110 cell		3hr 57min	4hr 9min	4hr 33min	5hr 11min
	St. 11	early gastrula		4hr 9min	4hr 21min	4hr 54min	5hr 27min
	St. 12	mid gastrula		4hr 33min	5hr 9min	5hr 39min	6hr 28min
	St. 13	late gastrula		4hr 57min		5hr 55min	7hr 3min
IV. Neurula Period	St. 14	early neurula		5hr 31min	6hr 3min	6hr 21min	7hr 39min
	St. 15	mid neurula		6hr 4min	6hr 27min	6hr 48min	8hr 35min
	St. 16	late neurula		6hr 25min	7hr 3min	7hr 24min	9hr 51min
V. Tailbud Period	St. 17	initial tailbud I		6hr 52min	7hr 55min	8hr 27min	10hr 27min
	St. 18	initial tailbud II		7hr 31min	8hr 27min	8hr 50min	10hr 51min
	St. 19	early tailbud I		7hr 40min	8hr 45min	9hr 19min	11hr 15min
	St. 20	early tailbud II		8hr 6min	9hr 3min	9hr 30min	11hr 39min
	St. 21	mid tailbud I		8hr 46min	9hr 33min	10hr 2min	12hr 15min
	St. 22	mid tailbud II		9hr 29min	9hr 57min	10hr 54min	13hr 3min
	St. 23	late tailbud I		10hr 11min	10hr 45min	11hr 54min	14hr
	St. 24	late tailbud II		11hr 23min	12hr 4min	13hr 27min	16hr 27min
	St. 25	late tailbud III		12hr 23min	14hr 5min	15hr 54min	19hr 3min
VI. Larva Period	St. 26	hatching larva		13hr 35min	15hr 39min	17hr 30min	22hr

The developmental table from stage 1 to stage 26 is based on Hotta et al., Dev Dyn. 2007. From stage 26 to stage 37 are based on present study (Hotta et al., 2020).

Developmental Stages after hatching larva in *Ciona* (Hotta et al., 2020)

Period	Stage Name	Images	18°C
VI. Larva Period	St. 26	hatching larva	15.6hr
	St. 27	early swimming larva	17.5-20 hr
	St. 28	mid swimming larva	20-22 hr
	St. 29	late swimming larva	22-24 hr
VII. Adhesion period	St. 30	adhesion	24-27 hr
VIII. Tail absorption period	St. 31	early tail absorption	27-28 hr
	St. 32	mid tail absorption	28-29 hr
	St. 33	late tail absorption	29-30 hr
IX. Body axis rotation period	St. 34	early body axis rotation	30-36 hr
	St. 35	mid body axis rotation	36-45 hr
	St. 36	late body axis rotation	45-60 hr
X. Juvenile Period	St. 37	early juvenile I	60-72 hr
	St. 38	early juvenile II	72-96 hr (3-4 days)
	St. 39	mid juvenile I	96-144 hr (4-6 days)

The duration of larval swimming differs among individuals. Matsunobu et al. (2015) showed that the hatched larva requires at least three or four hours to get competence to commence metamorphosis. So the time after fertilization after Larva Period was broad.