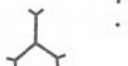
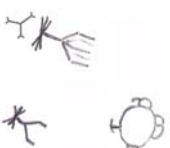
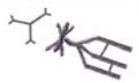


Stage	Shorthand	Days	Drawings	Smith et al. 2008	Chino et al. 2004	Description
0	no skeleton	≤ 21		V-VI	a-k	No spicule dot (or any other rudiment skeleton) is visible; "soft tissue" stage vi or earlier (see Table 1).
1	spicule dot	22		VI	k	At least one spicule dot is visible in the rudiment (first spicule dot is usually at the anterior edge of the rudiment, near the stomach/esophagus border); this occurs at about "soft tissue" stage vi-vii (see Table 1).
2	spicule	22-23		VI	k	At least one triradial spicule present in the rudiment.
3	MB / TF spic dots	23		VI	k	Multi-branched spicule (MB) and/or tube foot (TF) spicule dots present in the rudiment. The first MB spicules seen are the <i>de novo</i> ocular plate primordia of the urchin test, as well as the interambulacral plate primordia that will articulate with adult spines after stage 8.
4	TF spicules	24		VI	k	TF triradial spicule present in at least one primary podium.
5	sp primord / incomplete ring	25		VI	k-l	Adult spine primordium (6-prong spicule) present and/or TF spicules elongating but not forming complete ring in any primary podia.
6	spine primord + base / 1 st TF ring complete	26		VI	l	Adult spine primordium element elongating in direction orthogonal to 6-sided primordium (i.e., along the axis of the incipient spine) and/or 1st TF ring has fused to form a complete ring in at least one primary podium. 2nd TF ring may be beginning to form as bifurcating extensions from the 1st TF ring, but none of these bifurcations have yet started to fuse back with the 1st TF ring.
7	pre-spine / 2 nd TF ring ≤ ½ complete	27		VI	l	At least one adult spine primordium has a complete base + 6 fronds, but no cross hatches have formed between the fronds and/or the 2nd TF ring has bifurcating spicules that may have started to fuse in at least one primary podium, forming part of the incipient second ring, but this ring is at most half complete.
8	spines	28		VI	l	At least one cross hatch is now present in at least one forming adult (6-sided) spine. Spine growth can be further subdivided by counting the average and maximum number of cross hatches (see Figure 4).
9	2 nd TF ring > ½ complete	29		VI?	l	Bifurcating bits of the 2 nd TF ring have continued to fuse in at least one primary podium, so that more than half or the 2 nd TF ring is complete, but the 2 nd TF ring is not yet complete in any podium.
10	2 nd TF ring complete	30		VII?	m	2 nd TF ring is now complete in at least one primary podium. Larvae start becoming competent to settle at around this stage, though timing of competence seems to vary with skeletogenic stage.

