



Siphonophores are free-swimming colonial hydrozoans (Cnidaria). They are highly abundant in the oceans and can grow to be 40 meters long, but because they are so fragile and difficult to collect, very little is understood about them. Each colony is derived from a single embryo through asexual budding, and the genetically identical multicellular individuals that make up the colony are specialized for tasks such as feeding, locomotion, circulation, and reproduction. The individuals within the colony, and not the colony as a whole, are homologous to solitary free-living organisms.

Key to understanding the unique colony-level development of siphonophores is describing the cellular dynamics of the budding process, and cell division in particular. In this confocal micrograph, a 5 day old *Nanomia bijuga* embryo is stained for cell proliferation (Click-iT EdU, red) and shown against total DNA (Hoechst, blue). The float that maintains buoyancy can be seen forming in the brightfield image (top left, arrowhead). The bottom half of the embryo will become the first polyp. Extensive cell division (red) can be seen localized exclusively to the area where the first tentacle and the second tentacle bud have arisen. After these tentacles mature, the growth zone will develop in this central region, and will begin budding 5 of the 6 types of individuals in a repeating sequence.

