The Nudibranch Creature Feature

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What is a Nudibranch Anyway? Clown, Marigold, Splendid, Dancer, Dragon… nudibranchs have some of the most colourful names, and bodies, in the animal kingdom. Their peculiarities are more than skin deep too, as they have a number of quite intriguing survival strategies.

Nudibranchs are a family of *Opisthobranchia* (sea slugs) within the *phylum Mollusca* (molluscs). They are therefore cousins to chitons, limpets, abalone, whelks, scallops, oysters… even cuttlefish and octopus. And for those terrestrials out there, yes they are related to land snails and slugs too.

All molluscs have bodies of the same basic pattern, believe it or not. They have a muscular foot and a separate visceral mass containing all the messy bits. The visceral mass is contained in a sheet of skin called the mantle. A calcareous (calcium carbonate) shell is often present, although in the case of nudibranchs it is discarded after the larval stage.

There are several families under the order Nudibranchia. They all have external gills; that is what nudibranch means – "naked gills". Their gills are arranged either along the sides of the body or in a cluster on top towards the rear, which look like waving fern fronds. Think of them as lungs turned inside-out. Many nudibranchs can retract their delicate branchia and rhinophores when they feel threatened. Nudibranchs have a pair of rudimentary eyes and a pair of rhinophores that look like tentacles, which are chemical receptors.

You'd think that a slow-moving, small, shell-less animal would not want to be noticed. So why are nudibranchs often brightly-coloured? It's a warning to potential predators. Nudibranchs have highly sophisticated digestive systems, and most of the things they eat are either toxic or venomous, such as sponges, soft corals and hydroids. The nudibranch's digestive system can identify and separate the toxins and stinging cells, avoid digesting them, and move them onto the animal's back where they continue to provide protection to their new host. So the bright colours are a warning – "I'm toxic"!

Nudibranchs are hermaphrodites – they have both male and female reproductive organs in the one body. For genetic diversity, however, they don't want to self-fertilize, so they still have to find a mate. This is a good strategy for a sparsely-distributed animal, because when you do find another individual of the same species, you have 100% chance they will be the right sex! Nudibranch reproductive organs are on the forward right side of the body, so a mating pair lines up in the characteristic head-to-tail position and each animal provides sperm to the other. Fertilisation then takes place internally, and the animals lay a spiral egg mass. Some species, like blue dragons, stay around to protect their eggs.

There are over 300 species of nudibranch in Australia. The most commonly-found families are:

Family	Description	Photo
Doridae	Named after the Greek sea nymph, Doris, they are often drably coloured and feed primarily on sponges. Most common in NSW are the marigolds and variable dorids.	
Chromodorididae	Brightly coloured, often tropical, they feed on sponges and other invertebrates and sequester the toxins in their own bodies for protection. Most common in NSW are the sweet ceratosoma, splendid, Tasmanian, Bennett's and black-margined chromodorids.	
Facelinidae and Flabellinidae	Best known are the blue and purple dragons. The blue dragon feeds on soft corals and sequesters photosynthetic algae (zooxanthellae) down its back, where the algae continue to produce food for the animal – a symbiotic relationship similar to that found in hard corals.	
Other Nubibranch Families	There are another 30 or so nudibranch families, so if you'd like to know more it's worth getting a book or two, or visiting one of several dedicated nudibranch web sites. For some divers, finding a rare species of nudibranch is a highlight, and of course some scientists dedicate their lives to studying these complex, unique animals. From the tropics to Antarctica, the surface of the sea to the ocean floor, there are nudibranchs to be found. Colourful in name and nature, a lifetime studying nudibranchs just doesn't seem to be enough!