



# Ocean Origins Table

TOPIC C: FORM AND FUNCTION  
TEACHER RESOURCE



THE AQUARIUM OF WESTERN AUSTRALIA

SEA FOR YOURSELF

Sea creature	Special feature and why they have it	Material/product inspired by this feature
Mussels	<ul style="list-style-type: none"><li>• Mussels and barnacles are found attached to rocks, ropes, or jetty pylons, and use feather-like appendages to sieve out their food from the ocean.</li><li>• As they don't move around to catch their food, to get the best supply of food and oxygen, mussels need to be where there is lots of water movement from currents and waves. Crashing waves and currents mean great food but it also makes it hard to hold on.</li><li>• To stay fixed in one place, mussels ooze a sticky slime from their foot that hardens within one minute into a very strong glue.</li></ul>	<p><b>Glue</b></p> <ul style="list-style-type: none"><li>• New glues that doctors can use on or even inside our bodies. (The blood in our bodies is as salty as seawater. The glue that works in seawater would therefore work in our bodies and could be used to fix tears in hearts or other parts of our body.)</li><li>• New stronger cement for builders.</li><li>• Glues that will work better in seawater for sailors, boats and oil rigs.</li></ul>
Seaweed	<ul style="list-style-type: none"><li>• Land plants have a cell wall that provides strength and rigid support, enabling them to stand up in the air.</li><li>• Under the ocean, this kind of support isn't needed. Instead, seaweeds need to be able to flow backwards and forwards with the ocean's waves and currents.</li><li>• The flexibility of seaweed is due to gel which gives them their jelly-like texture.</li></ul>	<p><b>Super thick creamy ice-cream</b></p> <ul style="list-style-type: none"><li>• Seaweed gel likes pulling water into it. If added to ice-cream, it soaks up all the water, making it thick and smooth instead of thin and runny. It also helps keep the water from forming ice when it sits in your freezer.</li><li>• This seaweed gel is also used to thicken toothpaste, salad dressing, bread, beers, puddings, cheeses and dairy products.</li></ul>
Coral	<ul style="list-style-type: none"><li>• Corals are animals that live together in groups.</li><li>• They share room within their bodies with algae (a type of plant) that makes food for them.</li><li>• To make the food algae need sunlight. This means that corals grow in shallow water where there is lots of sunlight.</li><li>• Lots of sunlight means sunburn. To prevent from being burnt, corals have made a sunscreen of their own.</li></ul>	<p><b>Sunscreen</b></p> <ul style="list-style-type: none"><li>• Coral sunscreen blocks UV light which is the part of sunshine that burns our skin.</li><li>• It took 10 years to develop, but you can now buy sunscreen with the special chemicals in it that we have copied from corals.</li><li>• The natural element is codenamed 855. Have a look on the back of your sunscreen container to see if it is one of the ingredients!</li></ul>

Table continued on next page...

Sea creature	Special feature and why they have it	Material/product inspired by this feature
Sharks	<ul style="list-style-type: none"> <li>• The skin of a shark is covered in microscopic teeth arranged into V-shaped bumps, giving shark skin its characteristic rough feel.</li> <li>• This makes sharks quick and efficient swimmers by reducing friction when the shark glides through the water.</li> </ul>	<p><b>Racing bathers and rocket ships!</b></p> <ul style="list-style-type: none"> <li>• The surface of Speedo's "fast skin bathers" copies the tiny V-shaped bumps of a shark's skin. Just like on a shark, it reduces drag on the swimmer's body so that they can slip through the water more smoothly and easily.</li> <li>• This design was so effective that at the Sydney Olympics 28 of 33 gold medallists were wearing shark skin inspired bathers. This led to a big debate and the bathers have now been banned from competition.</li> <li>• NASA now uses shark skin inspired ridges on ships and aircraft. One day submarines may be totally covered in a shark skin style design. It might also be used inside of water pipes so that water can travel through them more quickly.</li> </ul>
Sharks and fast fish	<ul style="list-style-type: none"> <li>• Sharks and fast fish such as mackerel and tuna have tails with a very special shape. They are narrow at the base and then forked like a 'V'.</li> <li>• This is the fastest and most energy-efficient design for swimming.</li> <li>• Other sharks move their body from side to side as they move their tail, but with a narrow base, just the tail moves. This makes them 90% efficient at turning energy into speed.</li> </ul>	<p>Scientists are using a pretend shark tail installed onto the seafloor to generate energy. As water currents move the tail, the tail spins a turbine and power is generated.</p>
Mantis shrimp	<ul style="list-style-type: none"> <li>• To smash or spear their prey, mantis shrimp have two claws at the front of their body that move so fast they can create a shockwave.</li> <li>• To punch so hard, mantis shrimp have a special shock-absorbent core with a unique molecular structure. This structure stops small cracks from becoming full breaks.</li> </ul>	<p>Explosive-resistant material and stronger frames for cars.</p> <p>By copying the molecular structure of the mantis shrimps' claw, scientists hope to create stronger protective materials to keep us safe.</p>

*End of table.*