

SAME BUT DIFFERENT

CHILDREN OF THE
EVOLUTION

Produced and directed by **Ivo Filatsch**
Executive producer **Sabine Holzer**
1 x 50 min., 4K, 5.1 + Stereo




**TERRA
MATER
STUDIOS**

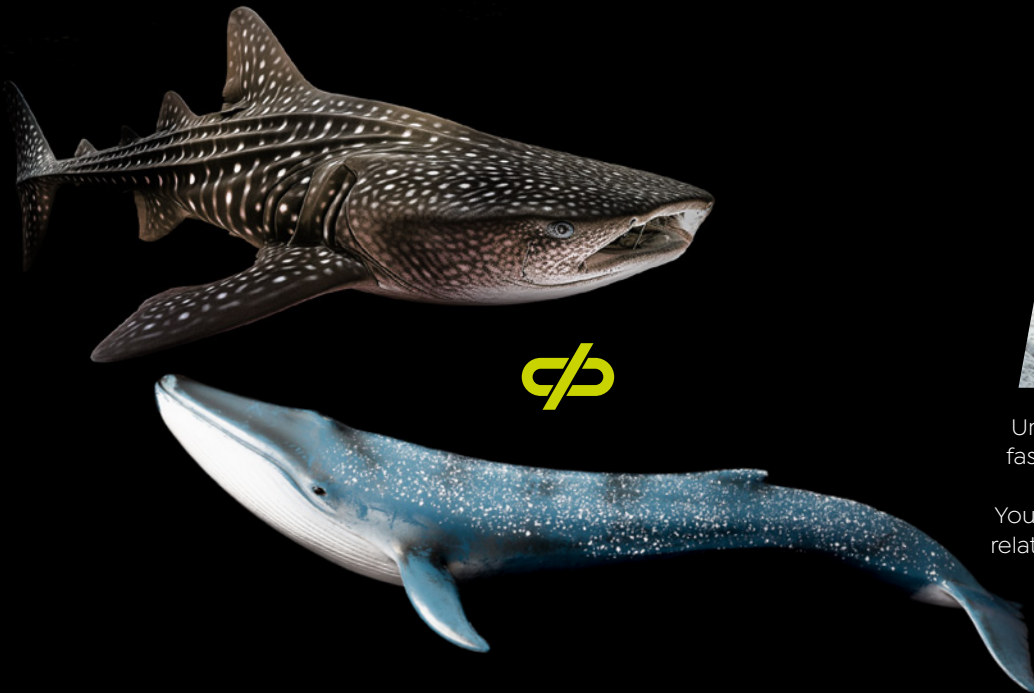
Nature – evolution – has spawned countless creatures. Today, Earth harbours millions of species – from tiny microbes to the largest animal ever to have lived on our planet, the 200 tonne blue whale.

Animals live on land, in the oceans, and in the air – and most species look very different in size and limbs, body shape and appearance. But nature is not what it seems. There’s a lot more to life than the usual picture. Some of them are closely related – closer than you’d expect.

Yet other species look surprisingly alike, with similar or even the same body features, even though they’re not even related – a phenomenon, called ‘convergent evolution’.

This film presents these discoveries in a fresh, entertaining, and yet very informative way. You will meet a lot of fascinating creatures with a wide variety of biological connections to one another – whether it’s differences or similarities.

Split screen shots bring certain species face to face, an entertaining way of visualizing and focusing on the animals’ commonalities – or on their contrasts ...



STRANGE RELATIONS

Discovering your family history often produces surprises – but the family trees of these creatures are even more revealing. Meet the rock hyrax: this cat-sized animal lives in Southern Africa and the Middle East. It somehow reminds of a marmot – although without a tail. But both species prefer rocky habitats, where they can escape from predators by taking refuge in little caves and crevices. And yet, rock hyrax and marmot are not related to each other at all.

Instead, one of the rock hyrax’s closest relatives is bigger – much bigger. It may be hard to believe – but it’s the elephant. And the rock hyrax has yet another even more unlikely relative – the manatee, or sea cow – a marine mammal that lives in tropical waters.



Uncovering these unexpected differences and similarities reveals some fascinating evolutionary stories.

You probably wouldn’t believe that we humans have – admittedly distant – relatives that can fly. Well, maybe not really fly – but they can take to the air.

In the jungles of south-east Asia lives the colugo, a gliding mammal whose closest evolutionary relatives are primates. And just like lemurs and monkeys, apes and great apes, we humans belong to this family, too.

Colugos live up in the trees of the rainforest. To get around the jungle, they spread their arms and legs, opening a large skin membrane. When they jump from a branch, this membrane carries them through the air, gliding over distances of up to 70 metres or so, while their cousins, such as monkeys or apes like the gibbon, can only jump from one tree to the next.

While colugos are 'flying', the largest birds on earth can't – but the ostrich can run very fast, up to 70 kilometres or so per hour. Very different from some ancient-looking relatives that still roam the earth – but seem to do this in slow-motion ...



Today's birds share a common group of ancestors, called theropods – a special group of dinosaurs. And there's yet another member of this very family – the crocodile.

They look completely different, show different features and different behaviour, but birds and crocodiles have more in common than you'd expect. For example, both reproduce by laying eggs.

A big difference, though, is that crocodiles bury their eggs in the ground and let the warm soil do the incubating, whereas most birds actively incubate their eggs with their body warmth, in nests. However, there are a few bird species that also use the soil to do the work – or they use a specially created pile of twigs and leaves.



Speaking of similarities that aren't obvious – there are two rodent species that look very different. One is small and completely naked, while its cousin is not only much larger, but bears spines up to 30 centimetres long.

The former is the naked mole-rat, the latter the porcupine. As well as looking nothing alike, there's another difference in their social behaviour.

The naked mole-rat is the only mammal that lives in large social colonies underground, with a queen, a clear hierarchy and distribution of tasks, just like ants or bees.

In contrast, the monogamous porcupine forms small family groups and lives on the surface, while New World porcupines like the urson even climb trees.



NOW IT'S THE OTHER WAY ROUND – JUST TAKE ANOTHER LOOK ...

A good example of animals that look similar but aren't related at all, are the hedgehog, the echidna (or spiny anteater), and the tenrec. And what do they all have in common? Spines – protection from attack by predators.

But despite looking so similar, all three species couldn't be more different. They don't even live in the same place. The hedgehog lives in Europe, Africa, and parts of Asia. The echidna inhabits Australia, Tasmania, and New Guinea, while the tenrec is endemic to Madagascar and some neighbouring islands.

And – even more interesting – they reproduce in somewhat different ways. The hedgehog and the tenrec give birth to living offspring, but the echidna lays eggs. It's the only mammal besides the platypus to do so.

Striking similarity in shape, size and habitat is also true for the largest creatures in the oceans. Amongst these giants are whales – and also whale sharks. But again, there are fundamental differences: while whales are marine mammals, whale sharks are the largest fish on the planet.

Whales give birth to living calves, just as land mammals do. In contrast, the reproduction of whale sharks is much more complicated – and quite fascinating.

Whale sharks are ovoviviparous – females keep their eggs in the body after these have been fertilized by the male. The females then give birth to live young which are about 40 to 60 centimetres long.

But it seems that the pups aren't all born at once, but rather the female retains sperm from one mating and produces a steady stream of pups over prolonged intervals. This way, whale sharks spread their offspring over a larger area and a longer period of time – which gives them a better chance of survival.

Speaking of sharks – these fish show quite a similar body shape to dolphins, who are whales. But due to convergent evolution, both species developed a very different way of swimming. Sharks have vertical tail fins, while the tail fins – or flukes – of dolphins are horizontal. This leads to accordingly different movements of their bodies that at first glance seem so similar.



An elongated silhouette slithering through grass and over ground – the first and obvious thought is: this must be a snake, because these reptiles slither across the ground by wriggling their whole bodies.

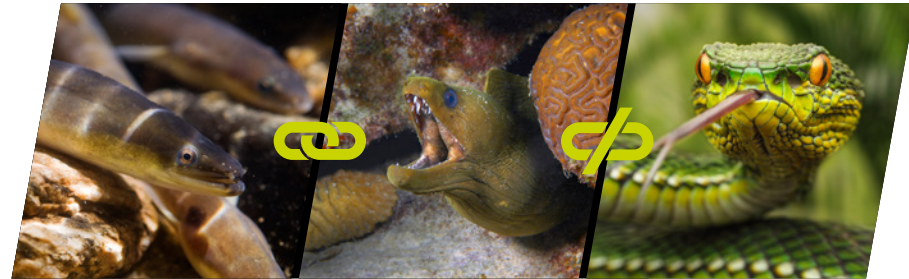
Snakes are very special creatures, but they're not the only ones to move like this. Some snakes even live in water, where they also propel themselves by wriggling.

But there are marine animals, too, very similar to snakes: moray eels. These snake-like fish inhabit shallow ocean waters and coral reefs, and they also swim in a very serpentine way.

Moreover, they have a quite fascinating cousin – the eel. Unlike many other migrating fish, eels begin life in the ocean, then spend most of their lives in fresh inland water, or brackish coastal water, before returning to the ocean to spawn and then die.

When eels travel upstream rivers, they're often forced to climb over obstacles or surmount obstructions, such as weirs, dam walls, and natural waterfalls, yet they can even leave the water and slither over preferably wet ground to get to the next body of water.

Eels can stay out of the water for hours, or even days, given the right conditions. And during this time, they might even meet some apparent relatives that move just like them – snakes.



This very special film reveals the connections between strange and fascinating species – the familiar and the unfamiliar. As it does, it reflects the incredible variety that nature has created on our planet.

And even more important: it shows that diversity is the most natural thing on Earth ...

Terra Mater Studios GmbH

Wambachergasse 2, 1130 Vienna / Austria
phone +43-1-87003-0, office@terramater.com

www.terramater.com

#terramatters