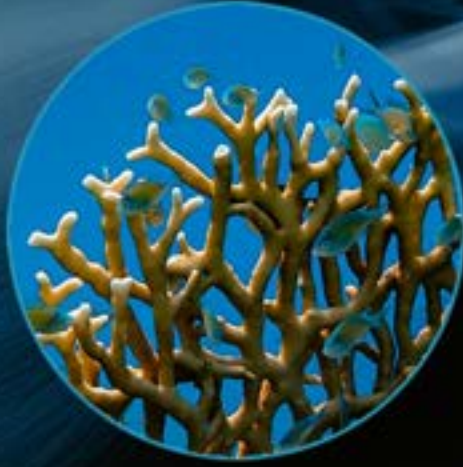




7 wonders
inspiring innovation



shark

Their sleek, hydrodynamic bodies and skin, covered in tiny tooth-like scales, have inspired scientists and engineers with ideas to improve speed, safety and performance of planes, trains and olympic swimmers.

innovation

Swimsuits and surfaces

Shark skin is covered in tiny structures called dermal denticles that reduce drag and prevent bacteria from attaching. These are now used in swimsuits and antimicrobial coatings.

[How shark skin is keeping us healthy and speedy](#) Video

Aircraft and wind turbine efficiency

The shape of shark fins and bodies helps reduce drag and improve lift. Engineers are using these insights to design more efficient airplane wings and wind turbines.

[Shark skin for aircraft](#) Article

Medical tools and regeneration

Sharks can grow thousands of teeth in their lifetime. This ability is helping scientists explore how stem cells might one day help humans regrow teeth.

[Reasons to smile at sharks:](#)
[Growing new teeth from stem cells](#)

stories

[The shark side of the moon](#)

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[What does it take to rule the waves? Meet the QueenShark](#)

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[Meet 5 kinds of sharks that help keep the ocean healthy](#)

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[Did you know... sharks are essential to ocean health?](#)

octopus

An octopus can squeeze through tiny crevices, change color in an instant and delicately pick up objects with its eight flexible arms. It's amazing—and it's inspiring waves of innovation.

innovation

Smart adhesives

Octopus suckers have led to reversible adhesives used in surgical tools and wearable tech.

Soft robotics

Inspired by octopus arms, researchers are designing flexible robots for delicate tasks in medicine, manufacturing and search-and-rescue.

Decentralized sensing

Two-thirds of the octopus's neurons are in its arms. This decentralized system is influencing new robotics that sense and react without needing a central processor.

stories

My Octopus Teacher
Netflix

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Octopus!
Prime Video

~

Octopus vs. underwater maze
Crunch Lab

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Did you know...
Octopuses have three hearts and nine brains!



whale

The unique shape of their flippers, with bumpy edges called tubercles, gives whales superior agility and control. These features are inspiring new designs in wind turbines, aircraft and fans to improve performance and reduce energy use.

innovation

[Wind turbine blades](#)

Whale fin-inspired blades generate more energy at lower speeds.

[Aircraft wings and stabilizers](#)

Tubercles to airplane wings and rudders improve fuel efficiency, reduce noise and enhance aerodynamic performance.

[Prosthetics & sports gear](#)

Whale flipper-inspired design is making prosthetics and sports gear more flexible, stable and high-performing.

[Acoustic tech to study blue whales](#)

In a world first, Australian researchers used acoustic technology to find, track and study blue whales near Antarctica.

stories

[The Good Whale](#)

NYT series

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[52 hertz, the loneliest in the world](#)

~

[Innovative fishing gear to protect whales](#)

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[A free diver rescues an entangled whale](#)

Did you know...
Whale poop helps climate change. [Find out how.](#)



jellyfish

Jellyfish glide through the water with soft, pulsing movements. Some species can glow using a natural light called bioluminescence. They are one of the oldest animals in the ocean, and their unique traits have led to major discoveries in science and medicine.

innovation

Glowing proteins for medical research

A jellyfish called *Aequorea victoria* led to one of science's biggest discoveries: green fluorescent protein (GFP). This glowing protein lets researchers see inside living cells, advancing cancer studies, brain research and more.

[How glow-in-the-dark jellyfish inspired a scientific revolution](#)
[Watch the story](#) [YouTube](#)

Bioinspired fluid dynamics

Jellyfish swimming patterns are inspiring innovations in submarine design, wind turbine placement, and even how we understand blood flow in human hearts.

[What can jellyfish teach us about fluid mechanics?](#) [Article](#)

Airjelly

Can we design machines that move through air like jellyfish swim through water? Yes.

[Airjelly overview](#), pdf
[Watch the Airjelly in motion](#), [YouTube](#)

stories

[Why do some jellies glow?](#)

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[How jellies outlived the dinosaurs](#)

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[The immortal jellyfish: how it turns back time](#)

~

[Did you know... Are jellyfish taking over the ocean?](#)

coral

Corals may look like rocks or plants, but they're living animals—builders of underwater cities that support 25% of marine life. Their efficient structures and natural resilience are inspiring breakthroughs in medicine, design and materials science.

innovation

Bioengineering

Corals are being used to create better materials for bone grafts, dental implants, and tissue scaffolds.

[Advanced biomaterials and biomedical engineering](#)

[Natural coral as biomaterial](#)

Materials

The cement industry is a major source of emissions—but coral-inspired materials could flip that.

[A new kind of cement that removes CO2](#)

[Biomimicry lessons for structural design](#)

[A revolutionary coral-inspired tech](#)

Architecture

Designers and scientists are using 3D printing to build artificial reefs that restore and protect marine ecosystems.

[3D printing coral reefs](#)

stories

[What is coral bleaching?](#)

~

[Alex Goad: MARS system of reef restoration](#)

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[Building super coral that withstands heat](#)

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[Top ten coral startups](#)

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[Adopt a coral](#)

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[Did you know...](#)

[What do corals eat?](#)



manta ray

With their graceful, wing-like fins, manta rays glide through the ocean with ease. Their movements and feeding systems are inspiring soft robots and new filtration designs that help explore and protect the sea.

innovation

[Unmanned underwater vehicles](#)

The first-of-its-kind uncrewed underwater vehicle look like a manta ray.

[Soft swimming robots](#)

Engineers are studying how manta rays swim to design agile, energy-efficient robots.

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[How manta rays' fins inspired a swimming robot's design.](#)

[New filtration systems](#)

Manta rays' food capturing system inspires new filtration systems that may be applied to filtering microplastics pollution.

stories

[Swim with manta rays](#)

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[Manta gets cleaned](#)

It's like an ocean carwash—manta rays get cleaned by tiny fish!

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[Manta Base](#)

If you see a manta ray, you can contribute to research and conservation efforts.

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[Did you know...](#)

[Manta rays have the largest brains of all fish](#)

mantis shrimp

Mantis shrimp are no more than 6 inches long, but they pack a punch like no other ocean animal. They are also known for their extraordinary vision. These two features have made them heroes in the worlds of material science and optics.

innovation

Why don't they get injured when they strike?

Mantis shrimp inspire new materials

Mantis shrimp inspire body armor and football helmet design

How do their eyes work?

Scientists are using the mantis shrimp's incredible vision to design sensors for biomedical imaging, environmental sensing and even smartphone cameras

Precise optical sensors inspired by mantis shrimp eyes

Mantis shrimp inspire new breed of light sensors

How are they so fast?

Robots mimick the powerful punch of a mantis shrimp

Mantis shrimp: the fastest puncher

The unbelievable punch of mantis shrimp

stories

Will robot spy survive the killer punch of a mantis shrimp?

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Mantis shrimp eyes are helping scientists design smarter AI systems.

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Did you know... Mantis shrimp are neither shrimp or mantis.

awe

“

Awe is the feeling of being in the presence of something vast that transcends your understanding of the world.”

- Dr. Dacher Keltner, *Awe: The New Science of Everyday Wonder and How It Can Transform Your Life*

Listen to this conversation with Dr. Keltner on On Being:
[The thrilling new science of awe](#)

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