Podcast: Imagine This

Episode: How do fish breathe underwater?

Duration: 12’ 32”

[ABC Podcast sting – This is an ABC podcast]

[Classical music starts]

**Nij:** Hello, my name is Nij and today on Imagine This, we’re talking about something with scales….

**Kids**: Uh, a fish has scales

**Nij:** And tails….

**Kids:** Fish?

**Nij:** … and gills!

**Kids:** gills. Yeah, fishes have gills

**Nij:** You’re too good at this. Yes, we’re talking about our fishy friends in the ocean. There are all kinds of life under the sea.

**Kid 1:** Crabs.

**Kid 2:** And fish.

**Kid 3:** And humpback whales.

**Nij:** Today’s question comes from 7-year-old Elyssa

**Elyssa:** Hi, my name’s Elyssa. And my question is, how do fishes breathe underwater?

**Nij:** That’s a great question. How do fish breathe underwater?

**Kid 1:** Gills!

**Kid 2:** Gills have got bones in them?

**Kid 3:** I don’t know what gills do

**Nij:** Yeah, I don’t know either! But I do know someone who might! Tooni Mahto, she’s a marine biologist. That’s a scientist who learns all about the living things under the sea. Tooni loves the ocean! Let’s head to the beach and see if we can find her….

[Classical music stops, sounds of ocean waves starts]

**Nij:** Hey Tooni, I knew we’d find you here…

**Tooni:** At the beach? Busted! I love it here and I’m lucky I get to work here too.

**Nij:** Well it’s lucky for us, cause we have a question. How do fish breathe underwater?

**Tooni:** Ah yes, great question. Well, almost everything on Earth needs oxygen.

**Kids:** Yes, it’s what keeps us alive

**Tooni:** We get it by breathing air in through our mouths and into our lungs. If you put your hands on your chest and take a deep breath in, you can feel your lungs get bigger as they fill with air…

[Sound of someone breathing in]

**Kids:** My chest goes up and down

[Sound of someone breathing out]

**Tooni:** Just like there’s oxygen in the air, there’s also oxygen in the ocean and fish need to breathe it, just like we need to breathe air.

**Nij:** So, do fish have lungs like us?

**Tooni:** No, they breathe very differently. It’s hard to tell what happens under the sea from up here… So, let’s imagine ourselves as animals under the sea

**Kid 1:** I wanna be a octopus

**Kid 2:** Yeah! I wanna be a dolphin

**Kid 3:** Either a turtle or a seahorse

**Nij:** Oh - Can I be a seahorse too? I love seahorses!

[Neighing sound effect]

**Tooni:** For sure!

**Nij:** Alright, here we go….

[Nij takes a deep breath in]

[Sound effect of travelling down under water, descending musical scale]

**Nij:** I am feeling my seahorse self! Check out my tail!

[Sound effect of a horse]

[Kids laugh]

**Nij:** Ah you look great everyone. Oh my gosh Tooni! You’re a penguin!

[Sound of a penguin call]

**Tooni:** It’s always been my dream to be a penguin! They’re such clowns on land and acrobats underwater. Ok, so now I have a question for you. Up above the surface, on the land, where does oxygen come from?

**Kid 1:** It comes from trees

**Kid 2:** Oxygen!

**Kid 3:** Trees make it!

**Tooni:** That’s true. Trees do make oxygen, and it’s the same down here in the ocean. Underwater plants make oxygen too.

**Nij:** What kind of plants?

**Kid 1:** I would say seaweed

**Kid 2:** Seaweed?

**Kid 3:** It’s really tall, and it’s got leaves?

**Tooni**: Yeah, exactly. Seaweed! But the type that makes lots of oxygen is so small you can’t see it with your eyes. It’s microscopic.

**Kids**: Very very very very small

**Tooni:** It’s called phytoplankton.

**Kids:** Phytoplankon.. what’s Phyto… plankton? Do they go ‘float float float float’?

**Tooni:** Yep. These small bits of floating seaweed make most of the oxygen in the ocean.

**Kids:** Amazing

**Nij:** Wow! But they’re so small!

**Kids:** How do they do it?

**Tooni:** Just like the trees on land. Phytoplankton floats on the surface of the water and uses sunlight to make energy. Doing this creates oxygen in the water for everything to breathe. Phytoplankton are incredibly important.

**Nij:** So now we know this special seaweed makes oxygen in the ocean… but how do fish breathe it?

**Tooni:** Wave those tails and follow me to the kelp forest. Lots of different kinds of animals live there. We can see how they all breathe…

**Nij:** Woah! My fins are getting a workout today. Alright, let’s do it

[Bubbles sound effect]

**Kids**: Over here!

[Classical music starts]

**Nij:** There are so many animals down here

**Kids:** A rainbow jellyfish

**Nij:** Ah! There’s an eel!

[Zapping sound effect]

**Kid 1:** No that’s a stingray

**Kid 2:** I think some sea dragons could live here, and some seahorses?

**Nij:** Hey that’s us

**Tooni:** Let’s start with fish, how do you think they breathe underwater?

**Kid 1:** Gills!

**Kid 2:** Fish use gills to breathe underwater sometimes

**Tooni:** Yeah that’s right, fish take in water that’s full of oxygen. They suck it in through their mouths and push it out over their gills. On the outside of a fish, gills look like thin slits in their skin on either side of their head. On the inside though, gills are wide and flat and they’re made of very thin skin. Oxygen can get through this skin, but water can’t. The oxygen goes in and is carried off through the fish’s body, and the water is pushed out of those slits you can see at the sides of their head.

**Nij:** Oh! I always thought the water went in and out of the gills to make them breathe

**Tooni:** No, they’re more like vents to let the water and carbon dioxide out.

**Kid 1:** Yeah. Carbon dioxide helps us breathe

**Kid 2:** It’s what we breathe out

**Nij:** Yeah, we breathe in air and oxygen, and breathe out air with carbon dioxide.

[Sound effect of someone breathing]

**Tooni:** Yes, and fish are the same! But they breathe in water and oxygen. And breathe out water and carbon dioxide.

[Classical music stops]

**Nij:** That’s so cool. So now we know how fish breathe, can I go play in the octopuses garden?

[Horse neigh sound effect]

**Kids:** Hold your seahorses!

[Tooni laughs]

**Kids:** What about dolphins? What about whales?

**Tooni:** Let’s see if we can spot any…

**Kid 1:** Over there!

**Kid 2:** Is it a dolphin or something else?

[Dolphin noises]

**Kid 1**: A dolphin!

**Kid 2:** They blow water out of the blowhole

[Blowhole sound effect]

**Kids:** And so do whales do that, and humpback whales

[Humpback whale sounds]

**Tooni:** Yeah, it’s called a blow hole and it’s basically a big nose on top of their heads!

[Kids laugh]

**Tooni:** Dolphins and whales don’t have gills like fish, because they’re mammals. They have lungs like us.

**Kids**: They go underwater and then they breathe up back on the surface

**Tooni:** So they have to hold their breath underwater, sometimes for a really long time.

**Kids:** How long?

**Tooni:** Some whales can hold their breath for a couple of hours

**Nij**: Two hours?!

**Tooni:** When they need to breathe oxygen, they swim to the surface and do a big breath out…

[Whale spout sound effect]

**Tooni:** Then they take in a big gulp of air through their blow hole and fill their lungs before holding their breath again.

[Sound of a whale call]

**Nij**: So we’ve learnt how fish breathe using their gills, and how dolphins and whales hold their breath. Are there any other ways to breathe underwater?

**Kids:** A piece of seaweed or a starfish

**Tooni:** Let’s swim down to the seabed, there are a few more surprises down there

[Classical music ends]

[Underwater sound effects]

**Kids:** Wow, look at all the coral

**Nij**: a coral reef! It’s so beautiful up close

**Kids**: listen to it

[Light music starts]

**Tooni**: There are lots of wonderful, colourful creatures in the ocean. Big, blobby jellyfish….

[Blobby sound effects]

**Kid 1:** Why jellyfish has no eyes?

**Kid 2:** They don’t have eyes because they have tentacles like octopuses

**Tooni:** Sharp, spiky sea urchins…

**Nij:** Ooh don’t touch them

**Kids:** I think you might get stinged yeah

**Tooni:** They all look so different but jellyfish, sea urchins and starfish all have a pretty simple way of breathing.

**Kids:** Do they have gills?

**Tooni:** Nope.

**Nij:** What about blowholes?

**Tooni:** Nope. They suck in oxygen from the water, straight through their skin.

**Kids:** Wow!

**Nij:** It’s so amazing imagining ourselves underwater and seeing how all different kinds of life breathes oxygen. But this little seahorse is getting tired. Can we swim back to the surface?

**Tooni:** Yeah, let’s do it…

[Light classical music as they travel back to land]

[Nij takes a deep breath in and out]

[Beach sound effects, waves and wind]

**Nij:** I always knew oxygen was important for us all to breathe on land. But I never thought about oxygen in the ocean.

**Tooni:** Ocean oxygen is important for all life on Earth, not just life in the water.

**Kids:** How come?

**Tooni:** Trees and plants do make oxygen on land, that’s true. But most oxygen that you and I breathe actually comes from the ocean. In fact, the ocean makes more oxygen than all of the world’s rainforests put together!

**Kids:** Wow!

**Nij:** What? How?

**Tooni:** Remember that little plant I told you about – the teeny, tiny seaweed?

**Kids:** Phytoplankton?

**Tooni:** Yes, phytoplankton the microscopic seaweed makes oxygen for animals to breathe in the ocean, and for all of us to breathe up here on land

**Nij:** How does it get into the air?

**Tooni:** Well phytoplankton float on the surface of the water. While they’re floating around, they push out oxygen. Some of the oxygen goes in the water, and some of it goes out into the air. That’s why its so important to look after the ocean, it’s vital for all life on Earth.

[Ocean wave sound effect]

**Nij:** Tooni, thank you so much for showing us how fish breathe underwater. And how we all need the ocean to breathe.

**Tooni:** Oh it was fun! Come back for a visit anytime.

**Nij:** Bye Tooni!

**Tooni:** Bye Nij! Bye Kids!

**Kid 1:** Bye Tooni

**Kid 2:** Bye Tooni

[Ocean sound effects end, lilting classical music starts]

**Nij:** Elyssa, thanks for asking such a great question. Fish breathe by sucking water in through their mouths and pushing it out through their gills. Gills are made of really really thin skin. It’s thin enough for oxygen to get it in without any water. So the fish can take oxygen in and push water out. Oxygen in the ocean is made from tiny plants called phytoplankton. They float on the water, making oxygen for the world’s oceans. But this oxygen also travels into the air, into you, and me.

[Sound effect of someone breathing in and out]

**Nij:** So, if you think about it, each breathe we take is a gift from the sea.

[Music ends]

**Nij:** Imagine This is an ABC Kids listen podcast, hosted by me Dr Niraj Lal. Thank you to our guest Tooni Mahto from the Australian Marine Conservation Society and all the kids from today’s episode. This episode was written and produced by Soumia Bella. Senior Producer is Emma Gibbs and our audio engineer is Bryce Halliday. To hear more great podcasts for kids, download the ABC Kids listen app.