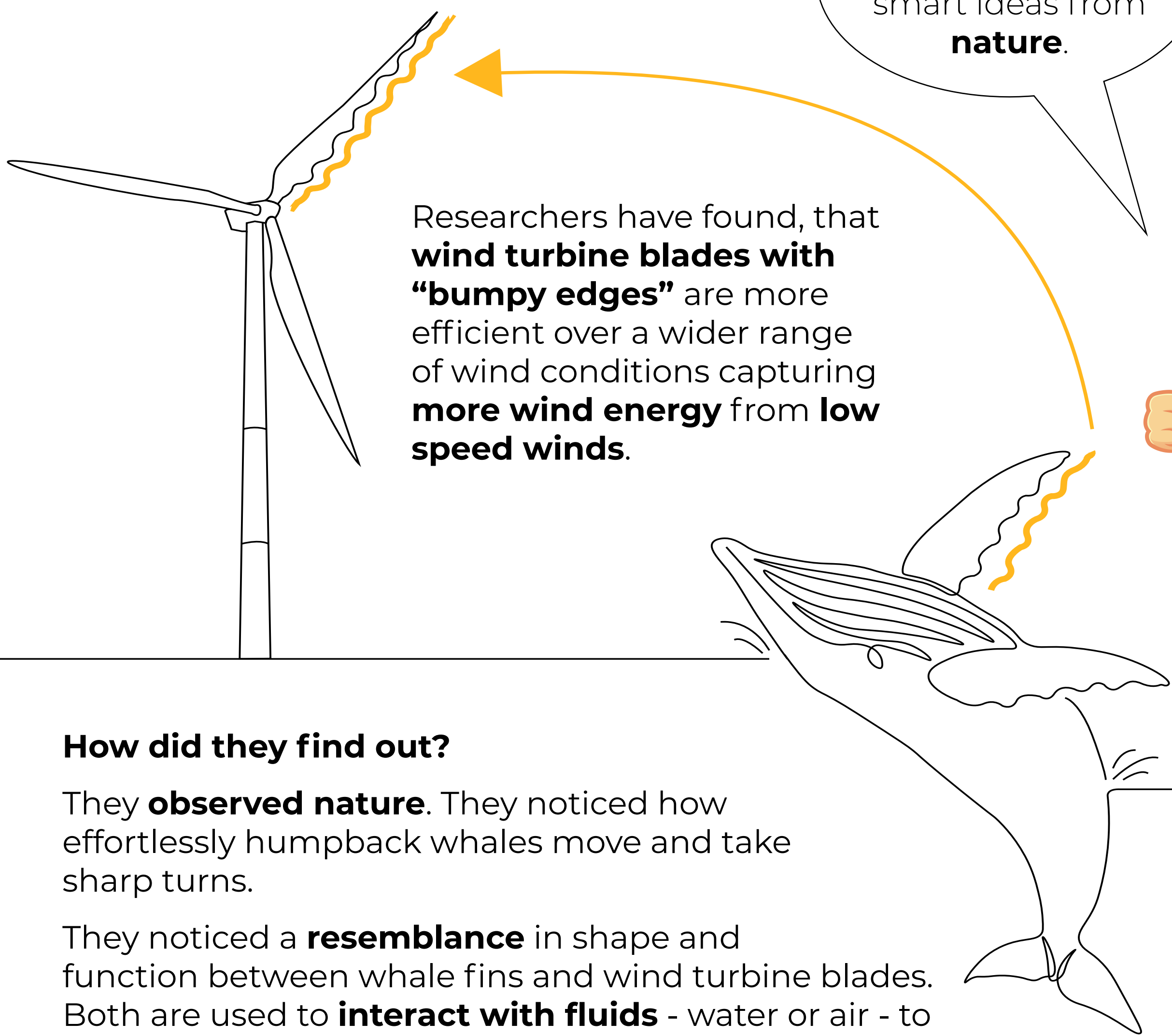


Biomimicry is when people **copy** smart ideas from **nature**.

“Tubercles”



Researchers have found, that **wind turbine blades with “bumpy edges”** are more efficient over a wider range of wind conditions capturing **more wind energy** from **low speed winds**.



Tubercles make it possible for humpback whales to take **sharp turns** and perform **agile** movements.

Why?
They **reduce “drag”**.

“Drag” is like the air pushing back against you when you try to run fast. So we want to reduce drag to be able to run faster.

How did they find out?

They **observed nature**. They noticed how effortlessly humpback whales move and take sharp turns.

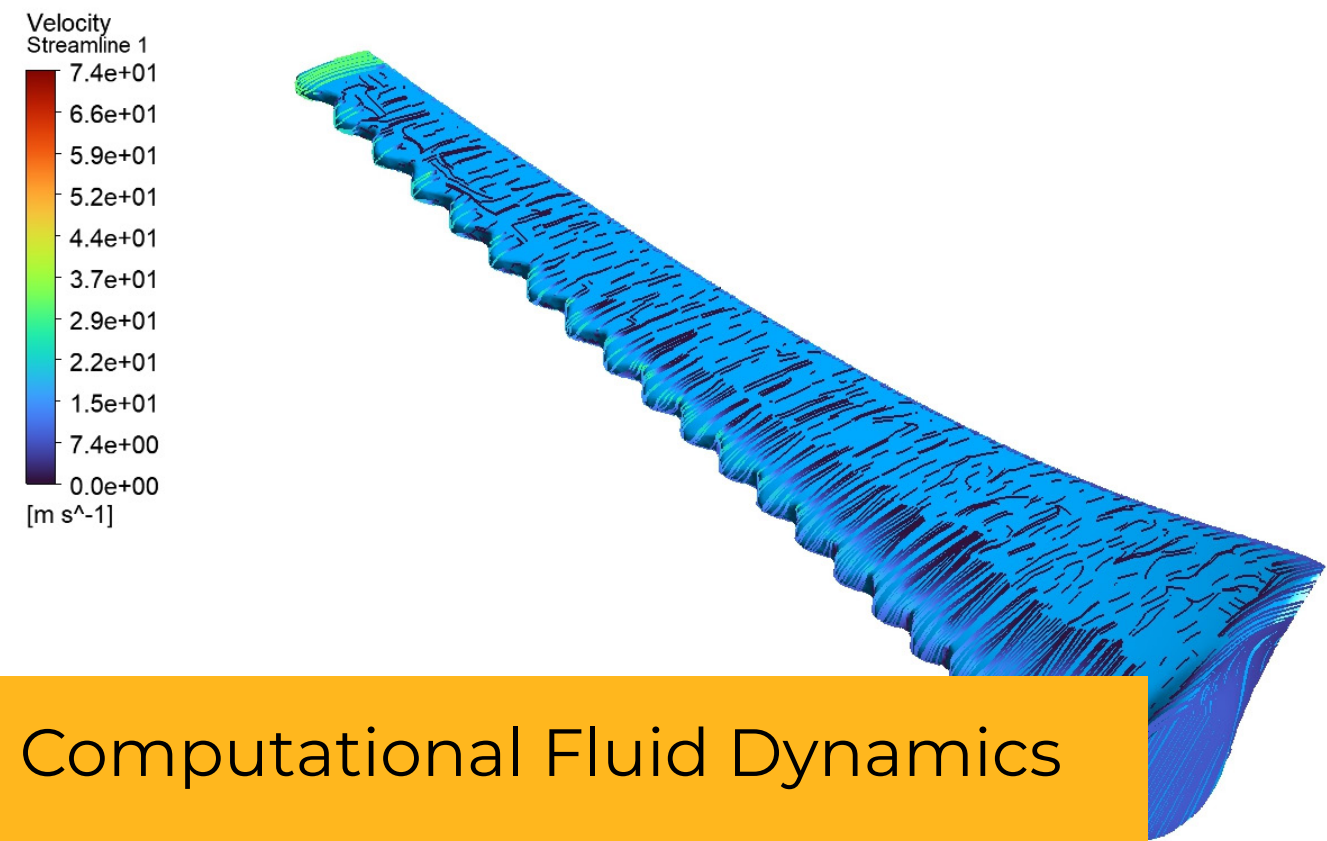
They noticed a **resemblance** in shape and function between whale fins and wind turbine blades. Both are used to **interact with fluids** - water or air - to **generate force or power**.

They **read studies** about **tubercles** on the fins’ edge being the reason for this **agility**.

So they took that idea and applied it to wind turbine blades.



Engineers use **fluid flow simulation** to see how **liquids or gases move** around an **object** and test how well it **performs** in those conditions.



Computational Fluid Dynamics (CFD) Simulation

And before having to spend money and time on manufacturing a blade and testing it in action, they **tested it on the computer first, through simulation**, to see if it works as well for the blade, as it does for the fin.



Can you think of **other animals** we could take **inspiration** from?
Check out the **activity cards!**

