



Humpback whales

BIOMIMETICS

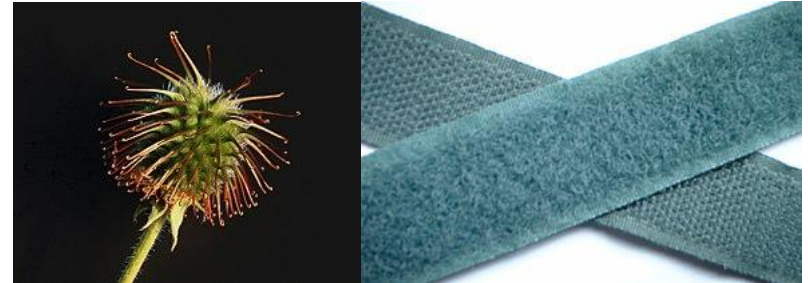
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Definition

Biomimetics or biomimicry is the imitation of the models, systems, and elements of nature for the purpose of solving complex human problems. Living organisms have evolved well-adapted structures and materials over geological time through natural selection. Biomimetics has given rise to new technologies inspired by biological solutions at macro and nanoscales.



We can use as an example the tiny hooks on bur fruits (left) inspired Velcro tape (right).



Example

Humpback whales have nodules and they use them in order to have a better “angle of attack”. This is the angle between the flow of water and the face of the flipper. With Humpback whales, this attack angle can be up to 40 percent steeper than a smooth flipper. Due to these small ridges, sectional stalls occur at different points along the fin. This makes a full on stall much easier to avoid.





Technological application

Nowadays, the modern aerodynamic designs are including these nodules. To obtain optimal lift and minimal drag, sleek edges and clean lines are key. Tests conducted by the U.S. Naval Academy, using model flippers, determined these biomimetic fins reduced drag by nearly a third and improved lift by eight percent overall.





Webgraphy

<https://en.wikipedia.org/wiki/Biomimetics>

<https://www.digitaltrends.com/cool-tech/bio-mimicry-examples/>

I also used Ethel's project as a guide.