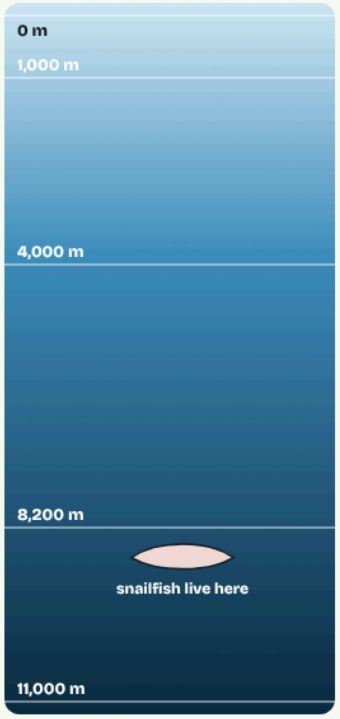
That is why

Why don't deep-sea animals get crushed?

Their bodies are full of water, not air, so the pressure inside matches the pressure outside.

A Pressure piles up



1 atm

about 100 atm

about 400 atm

about 820 atm

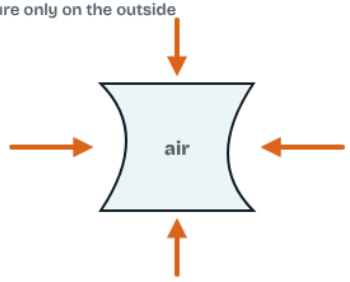
about 1,090 atm

+1 atmosphere (atm) for every 10 m (33 ft).
The deepest trench: 1,000 atmospheres or more.

B Air squeezes, water doesn't

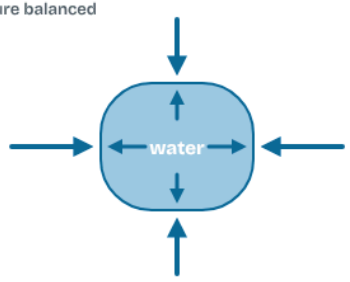
Air inside

pressure only on the outside



Water inside

pressure balanced



A jellyfish is about 95% water.
Deep-sea fish have no air-filled sacs.

C Protecting the molecules

1 The hidden danger

Even without air spaces, high pressure can squash the shape of proteins and cell membranes.

2 Piezolytes

Small helper molecules that keep proteins and membranes from being crushed.

The water balloon idea

Underwater, a water balloon keeps its shape: the water inside pushes back. Air spaces get squeezed instead, more and more with depth. Deep-sea animals are water balloons, not air bottles.

No air pockets to squash: the deep sea presses in, and the body presses back.

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