

World's Oldest Water

April 30, 2021

In News: Dr Barbara Sherwood Lollar of the University of Toronto, who in 2009 extracted from a Canadian mine water that is 1.6 billion years old-the oldest to be found on our planet.

About World's Oldest Water

- The discovery of water 2.4 kilometres under the surface of the Earth.
- Sherwood Lollar has been conducting research at the Kidd Creek mine, which is located on the 2.7 billion-year-old Canadian Shield, since 1992.
- One of the world's biggest continental shields, or portions of the Earth's crust that are the oldest and least tectonically active.
- A musty odour led Sherwood Lollar to make the crucial discovery while on an expedition in 2009.
- It's practically following your nose all the way up to the rock to locate the cracks or fractures where the water is leaking out.
- The water was very salty, ten times as salty as seawater.
- Sherwood Lollar received the Gerhard Herzberg Canada Gold Medal for Science and Engineering worth one million Canadian dollars in 2019 for her discovery, as well as the John C Polanyi Award from the Natural Sciences and Engineering Research Council of Canada in 2016.

What scientists found in the water

- Scientists discovered that chemolithotrophic microbes—bacteria that can live in the most harsh environments—were able to survive in the subterranean liquid after digging into the extremely saline water.
- The microbes were found to be feeding on nitrogen and

sulphate, and the chemistry that sustained them was close to that of ocean beds known to support similar extreme life forms.

- According to the paper, the Canadian Shield, on which the Kidd mine is located, once served as an ocean floor.
- Over millions of years of flux, however, its horizontal seabed became vertical, now preserved in the mine's rock walls from which the water sample was extracted.

Why this matters in the search for life on Mars

- The Canadian Shield is the closest analogue on Earth to the subsurface of Mars, according to researchers, since it is a continental shield that is least affected by plate tectonic activity.
- Scientists argue that if life-sustaining water can be found 2.4 kilometres under the surface of the Earth, the same could be true on Mars.
- This theory fuels missions like Perseverance, which are searching for signs of life on Mars, both present and past.