

Our water pipes crawl with millions of bacteria

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A glass of water contains millions of bacteria. Credit: Lund University

Researchers from Lund University in Sweden have discovered that our drinking water is to a large extent purified by millions of "good bacteria" found in water pipes and purification plants. So far, the knowledge about them has been practically non-existent, but this new research is about to change that.

A glass of [clean drinking water](#) actually contains ten million bacteria! But that is as it should be – clean tap [water](#) always contains [harmless bacteria](#). These bacteria and other microbes grow in the [drinking water treatment](#) plant and on the inside of our water pipes, which can be seen

in the form of a thin, sticky coating – a so-called biofilm. All surfaces from the raw water intake to the tap are covered in this biofilm.

Findings by researchers in Applied Microbiology and Water Resources Engineering show that the diversity of species of bacteria in water pipes is huge, and that bacteria may play a larger role than previously thought. Among other things, the researchers suspect that a large part of water purification takes place in the pipes and not only in water purification plants.

"A previously completely unknown ecosystem has revealed itself to us. Formerly, you could hardly see any bacteria at all and now, thanks to techniques such as massive DNA sequencing and flow cytometry, we suddenly see eighty thousand bacteria per millilitre in drinking water," says researcher Catherine Paul enthusiastically.

"From having been in the dark with a flashlight, we are now in a brightly lit room, but it is only one room. How many different rooms are in the house is also an interesting question!" she continues.

The work of doctoral student Katharina Lührig, who works together with Catherine, professors Peter Rådström and Kenneth Persson, and colleagues Björn Canbäck and Tomas Johansson has been published in *Microbes and Environments*.

The results have led to lively discussions within the industry about the role of biofilms in [drinking water](#).

At least a couple of thousand different species live in the water pipes. According to the researchers there is a connection between the composition of bacteria and water quality.

"We suspect there are 'good' bacteria that help purify the water and keep

it safe – similar to what happens in our bodies. Our intestines are full of bacteria, and most the time when we are healthy, they help us digest our food and fight illness, says Catherine Paul.

Although the research was conducted in southern Sweden, bacteria and biofilms are found all over the world, in plumbing, taps and [water pipes](#). This knowledge will be very useful for countries when updating and improving their water pipe systems.

"The hope is that we eventually may be able to control the composition and quality of water in the water supply to steer the growth of 'good' [bacteria](#) that can help purify the water even more efficiently than today", says Catherine Paul.

More information: Katharina Lührig et al. Bacterial Community Analysis of Drinking Water Biofilms in Southern Sweden, *Microbes and environments* (2015). [DOI: 10.1264/jsme2.ME14123](https://doi.org/10.1264/jsme2.ME14123)

Provided by Lund University

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