

# **Best of Last Week—Penguins may possess self-awareness, a new way to refrigerate, the huge expense of treating sepsis**

January 3 2023, by Bob Yirka

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An Adélie penguin gazing intently at their image during a modified mirror test.  
Credit: bioRxiv (2022). DOI: 10.1101/2022.11.04.515260

It was a good week for biological research as a team of biologists from Czechia, Germany and Austria, discovered [a type of bacteria](#) that uses

both bacteriochlorophyll-based photosynthetic complexes and proton-pumping rhodopsins to convert sunlight into energy—the first known example. Also, a trio of researchers from India conducting [the mirror test with wild Adélie penguins in Antarctica](#), found that they may possess self-awareness. And a team at the University of Nebraska-Lincoln, found that [a species of Halteria](#) can eat huge numbers of infectious chloroviruses that share their aquatic habitat—the microscopic ciliates populate freshwater ponds across the world.

In technology news, a pair of researchers at Lawrence Berkeley National Laboratory used an ethylene carbonate solvent with a sodium iodide salt to [create a new kind of refrigerator](#)—one that does not emit any hydrofluorocarbons or other pollutants. And a team at Stanford University developed [a new kind of spray-on smart skin](#) that uses AI to rapidly understand hand tasks—applied to the back of the hand, the spray builds a mesh that serves as an electrical network sensor. Also, an international team of researchers found that emerging forms of [thin-film device technologies](#) that rely on alternative semiconductor materials may contribute to a more economically and environmentally sustainable Internet of Things. And a team with members from several institutions in China [revisited the ideas behind the work that led to the first photovoltaic materials](#) to describe its possible role in modern indoor photovoltaics applications.

And in other news, a team at the U.S. National Institutes of Health tested tissue extracted from autopsies performed on 44 people who had died from COVID-19 and found that the SARS-CoV-2 virus had spread [throughout much of the body, including the brain](#)—findings that suggest that infections by the virus are not just respiratory-based. Also, Kyu-Hyun Chae, an astrophysicist at Sejong University, in the Republic of Korea, found evidence from high-resolution velocity curves of 152 galaxies that [supports a modified gravity model over dark matter](#). And finally, a team at Tufts University School of Medicine found that [sepsis](#)

[is one of the most expensive medical conditions in the world.](#)

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