

Best of Last Week—Arctic lakes drying up, teaching an AI system to play soccer, how fentanyl affects the brain

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Machine learning football simulator. Credit: Science Robotics (2022). DOI: [10.1126/scirobotics.abo0235](https://doi.org/10.1126/scirobotics.abo0235)

It was a busy week in Earth and biological sciences as a team of researchers with the Ocean Cleanup project and Wageningen University, both in the Netherlands, found that [more than 90% of the identifiable trash](#) in the North Pacific Garbage Patch comes from just six countries—Japan, China, South Korea, the U.S., Taiwan and Canada. Also, a team with members affiliated with several institutions in the U.S. found evidence of [permafrost thaw driving surface water decline across lake-rich regions of the Arctic](#)—the disappearance of a large number of lakes in the region has come as a surprise to climate scientists. And the discovery of oak galls near an ant colony by an eight-year-old boy turned out to be part of [a previously unknown, elaborate relationship among ants, wasps and oak trees](#).

In technology news, a team with Sony Computer Science Laboratories developed [a way to use a generative adversarial network architecture](#) to restore heavily compressed music files. Also, a team of researchers at Google's Deep Mind London project figured out [a way to teach animated players how to play a realistic version of soccer on a computer screen](#), without ever teaching them the rules. And a team of researchers at the University of Washington developed [the first underwater messaging app for smartphones](#)—called AquaApp, the technology allows snorkelers and scuba divers to communicate using native smartphone hardware, overcoming the need to memorize hand signals. Also, a combined team from the University of Toronto and the Barcelona Institute of Science and Technology developed [a new, highly efficient lead-bin binary perovskite photodetector with a fast response time](#).

In other news, a team of researchers at Columbia University Irving Medical Center discovered that [a common back ailment could be a sign of heart failure](#)—known technically as lumbar spinal stenosis, the back ailment appears to be related to the development of amyloid deposits in the spine, a symptom of transthyretin amyloid cardiomyopathy. Also, a team at New York University found that [an insulin-suppressing protein](#)

[may be the fountain of youth for ants](#) and may provide clues about aging in other species. And finally, a team at Massachusetts General Hospital discovered [how fentanyl affects the brain over time](#), and how it stops people from breathing, even before they lose consciousness.

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