



Tech Insider Stories 3 March 2023

Story 1: Scientists pioneer new cloud seeding techniques to fight global drought

Source: ScienceTimes.com

Story by Joshua Stan

Link: <https://www.sciencetimes.com/articles/42282/20230208/unlocking-power-cloud-seeding-scientists-pioneer-innovative-techniques-fight-drought.htm>

Source: USDA Agricultural Research Service

Story by Kathryn Markham

Link: <https://www.ars.usda.gov/oc/dof/seeding-the-skies-harvesting-rain/>



ARS research engineer Daniel Martin (right) stands with a pilot next to one of the agricultural aircraft used to spray the charged droplets. (Photo courtesy of Daniel Martin, D4964-1)



An airborne plane sports the nozzles used to spray the charged particles. (Photo courtesy of Daniel Martin, D4963-1)

- Severe droughts around the world are prompting the exploration of new and advanced cloud seeding methods.
- Before we talk about one of these new methods, here's a quick refresh on established cloud seeding techniques:
 - Clouds are formed when water droplets condense in the sky.
 - AND Certain particles, such as silver iodide and salt particles, tend to attract water or ice and can potentially accelerate the process of generating rain.

- Silver iodide and salt particles have been used in cloud seeding to stimulate rain since the 1940s.
- More recently, planes equipped with flares attached to their wings burning silver iodide have been flying through clouds to further stimulate rain, with some success – generating 10-15% additional rainfall.
- One new and exciting alternative involves using charged water molecules.
- This past summer [as part of a multi-year US Department of Agriculture project] a team of researchers tested the use of charged water molecules.
- Here's what they did:
 - Thunderclouds contain positive and negatively charged water molecules.
 - Water molecules with opposite charges are attracted to each other and will combine to form drops large enough to fall as rain.
 - SO, what if you could accelerate this process by injecting a large dose of charged water molecules?
- To boost this natural rainmaking process the U S D A team equipped a plane with water tanks and special electrostatic nozzles on its wings and conducted test flights in the West Texas atmosphere.
- At the right moment, the plane released a spray of positively charged water molecules into a cloud causing the positive and negative water molecules to collide, bind together, and produce more rain.
- Initial results MARK look good, as the U S D A reports a 25-30% increase in rain production as compared to established cloud seeding techniques.



Story 2: New artificial intelligence tool helps predict if chemotherapy will benefit a breast cancer patient

Source: CosmosMagazine.com

Story by Evrim Yazgin

Link: <https://cosmosmagazine.com/technology/ai-breast-cancer-treatment/>



Credit: uchar / E+ / Getty.

- Researchers at the University of Waterloo in Ontario, Canada have developed a new artificial intelligence software tool to help doctors better predict if patients with breast cancer would or would not benefit from chemotherapy.
- The remarkable results now being achieved with this new AI tool were made possible by training the software to analyze breast cancer images created using the latest, cutting-edge imaging technology called CDI for "correlated diffusion imaging".
- The machine learning process used to train the new AI tool involved analyzing a large set of actual breast cancer patient CDI-generated images along with information about the treatment outcomes for each image.
- The end-result of this intensive machine learning process is an AI tool that can predict [with remarkable accuracy] whether pre-operative chemotherapy would [or would not] be beneficial based on each patient's breast images.
- In fact, the researchers found that the combination of their new AI software tool working with advanced CDI breast cancer images offered a prediction accuracy of 87.75 percent – higher than results obtained USING current MRI technology.

Story 3: Scientists are making catfish hybrids with alligator DNA

Source: ScienceAlert.com

Story by Hannah Getahun

Link: <https://www.sciencealert.com/scientists-are-making-catfish-hybrids-with-alligator-dna-for-us-to-eat>



(IanCale/iStock/Getty Images Plus)

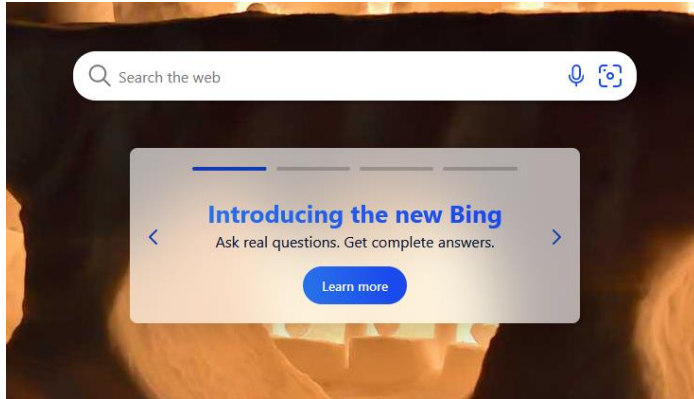
- Okay, why is this important? Well, catfish make up more than 50 percent of US demand for fish!
- But catfish farmers have a real problem: About 45 percent of farm-raised baby catfish living in crowded conditions die due to infectious diseases.
- To create a more disease-resistant catfish geneticists at Auburn University have been experimenting with genetically modifying catfish with a specific gene found in the intestines of alligators.
- This gene is an antimicrobial peptide responsible for helping an alligator fight diseases.
- Using the famous gene editing technology called CRISPR, the gene was added to the DNA of the test catfish.
 - This yielded up to a five-fold higher survival rate for farm-raised baby catfish.
- The Auburn University researchers hope that the alligator and catfish gene-editing can be used in tandem with other catfish breeding techniques to help farmers improve their catfish yields.

Story 4: Key trend to watch: Microsoft's Bing search engine to use powerful Artificial Intelligence technology

Source: CNN Business

Story by Clare Duffy

Link: <https://www.cnn.com/2023/02/07/tech/microsoft-ai-event/index.html>



- MARK, this happened a few weeks ago, but I wanted to make sure our listeners are aware of this.
- Last Month Microsoft announced a revamp of its Bing search engine and Edge web browser that now adds the power of artificial intelligence.
- This announcement came weeks after Microsoft confirmed plans to invest billions in OpenAI, the company behind the popular Artificial Intelligence-powered chatbot called ChatGPT that can DELIVER natural human-sounding answers to requests.
- With this new AI capability, Bing and Edge will not only provide a list of search results, but will also answer questions, chat with users, and generate content in response to user requests.
 - Microsoft is not alone when it comes to wanting to inject Artificial Intelligence into our daily lives.
 - Multiple tech giants, including Google, are now competing to deploy similar tools that could transform the way we draft e-mails, write essays and search for information online.