

In the News

Junk Science Jeopardizes Drug Development



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Elizabeth Holmes gained international attention when Theranos whistleblowers revealed that the company falsified the results of the Edison machine – a device supposedly able to perform numerous tests for indications of diseases such as diabetes or cancer with just a few drops of blood. The device was providing unreliable or false results, so lab employees drew attention to these problems and documented them in error reports. Those tips were ignored Holmes, correct data was filtered out of the results, and the wrong results were ignored. Holmes is currently serving 11 years in federal prison for defrauding Theranos investors of hundreds of millions of dollars and is due for release in 2032.

Watchdog Group [Retraction Watch](#) recently reported that a former University of Maryland department chair with \$19 million in National Institutes of Health grants faked data in 13 papers. The 13 papers features images representing unrelated experiments, falsely relabeling them as data representing different proteins and experimental results. The 13 papers were eventually cited 488 times.

Research misconduct of any kind – plagiarizing, faking or misrepresenting data – is sparking concern and compromising drug development. Last year, more than 11,000 sham papers had to be retracted by academic journals, but experts think this is just the tip of the iceberg. *Nature*

revealed there were just over 1,000 retractions in 2013 jumping 4,000 in 2022. According to a recent report in *The Guardian*, bogus research papers are being published in journals in an international scandal that is worsening every year. Of the 11,000 reported in 2023, 8,000 had been published in journals owned by a Wiley subsidiary. The publisher made the decision to shut down 19 scientific journals as a result. Similarly, 900 fraudulent papers were discovered at IOP Publishing back in 2022

This worldwide wave of sham science is sweeping laboratories and universities. The *Guardian* report traces the rise in the publication junk science papers to China, where young doctors and scientists seeking promotion were required to have published scientific papers. Shadow organizations – known as “paper mills” – began to supply fabricated work for publication in journals there. The practice has since spread to India, Iran, Russia, former Soviet Union states, and eastern Europe.

Others point to AI as having accelerated the issue. Generative AI is handing these paper mills a winning lottery ticket ([The Week](#)). Unfortunately, detection methods are not where they should be, making identification more challenging.

Fortunately, some journals have created rigorous standards for publication and increased surveillance to spot fraudulent papers. Fake science papers have telltale signs, like unusual wording to avoid plagiarism and references listed that are irrelevant to the paper’s topic. Both Wiley and IOP have taken steps to squelch fake science news by expanding teams to spot bad papers and investing in paper mill detectors that scan for awkward patterns and phrases.

Unfortunately, like bad news, fake news spreads quickly – the industry bore witness to that during the COVID pandemic. As one scientist writes in *Drug Discovery News*: “When bad science infiltrates the publication record, researchers unwittingly build their own research programs around shaky science. Not only does this waste researchers’ time and money, but it affects real people’s lives.”

[The Food and Drug Administration](#) tells PharmaCircle: “The growing spread of rumors, misinformation and disinformation about science, medicine, and the FDA, is putting patients and consumers at risk. With regard to potentially inaccurate studies in scholarly journals, publications have their own processes to ensure they publish truthful, accurate information, and we encourage those publications to remain vigilant for the sake of academic integrity and public health.”