The New York Times

The quiet withdrawal of a 2021 cancer study by Dr. Sam Yoon highlights scientific publishers’ lack of transparency around data problems.



By Benjamin Mueller
Benjamin Mueller covers medical science and has reported on several research scandals.

Feb. 15, 2024

The stomach cancer study was shot through with suspicious data. Identical constellations of cells were said to depict separate experiments on wholly different biological lineages. Photos of tumor-stricken mice, used to show that a drug reduced cancer growth, had been featured in two previous papers describing other treatments.

Problems with the study were severe enough that its publisher, after finding that the paper violated ethics guidelines, formally withdrew it within a few months of its publication in 2021. The study was then wiped from the internet, leaving behind a barren web page that said nothing about the reasons for its removal.

As it turned out, the flawed study was part of a pattern. Since 2008, two of its authors — Dr. Sam S. Yoon, chief of a cancer surgery division at Columbia University’s medical center, and a more junior cancer biologist — have collaborated with a rotating cast of researchers on a combined 26 articles that a British scientific sleuth has publicly flagged for containing suspect data. A medical journal retracted one of them this month after inquiries from The New York Times.



A Columbia University cancer surgeon, Dr. Sam S. Yoon, and a junior researcher have published a combined 26 articles that a data sleuth said contained irregularities.
Marcus Santos/ZUMA Wire, Alamy

Memorial Sloan Kettering Cancer Center, where Dr. Yoon worked when much of the research was done, is now investigating the studies. Columbia's medical center declined to comment on specific allegations, saying only that it reviews "any concerns about scientific integrity brought to our attention."

Dr. Yoon, who has said his research could lead to better cancer treatments, did not answer repeated questions. Attempts to speak to the other researcher, Changhwan Yoon, an associate research scientist at Columbia, were also unsuccessful.

The allegations were aired in recent months in online comments on a science forum and in a blog post by Sholto David, an independent molecular biologist. He has ferreted out problems in a raft of high-profile cancer research, including dozens of papers at a Harvard cancer center that were subsequently referred for retractions or corrections.

From his flat in Wales, Dr. David pores over published images of cells, tumors and mice in his spare time and then reports slip-ups, trying to close the gap between people's regard for academic research and the sometimes shoddier realities of the profession.

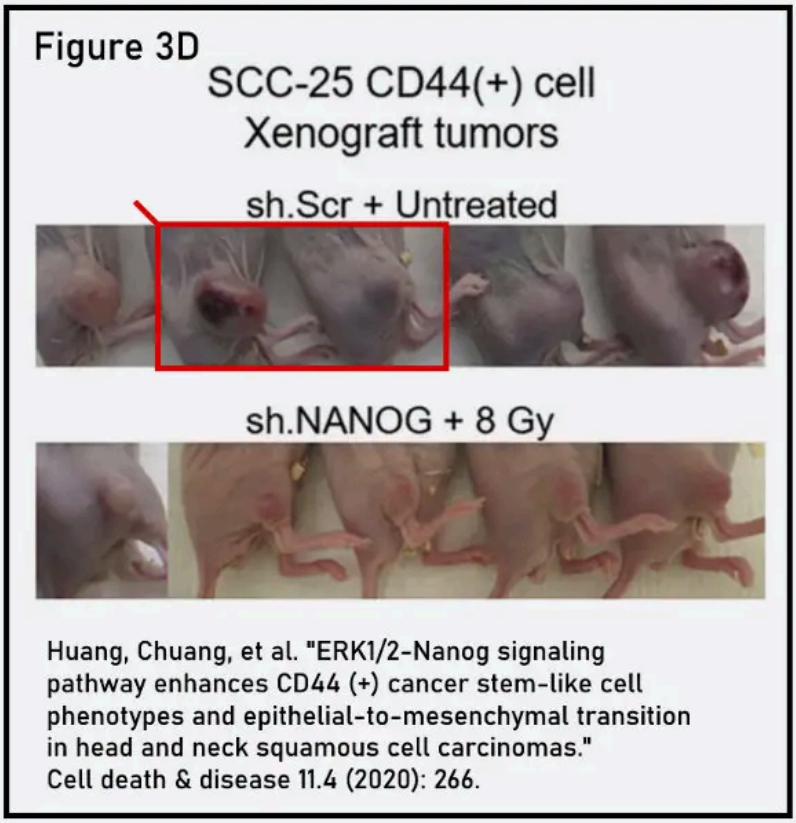
When evaluating scientific images, it is difficult to distinguish sloppy copy-and-paste errors from deliberate doctoring of data. Two other imaging experts who reviewed the allegations at the request of The Times said some of the discrepancies identified by Dr. David bore signs of manipulation, like flipped, rotated or seemingly digitally altered images.

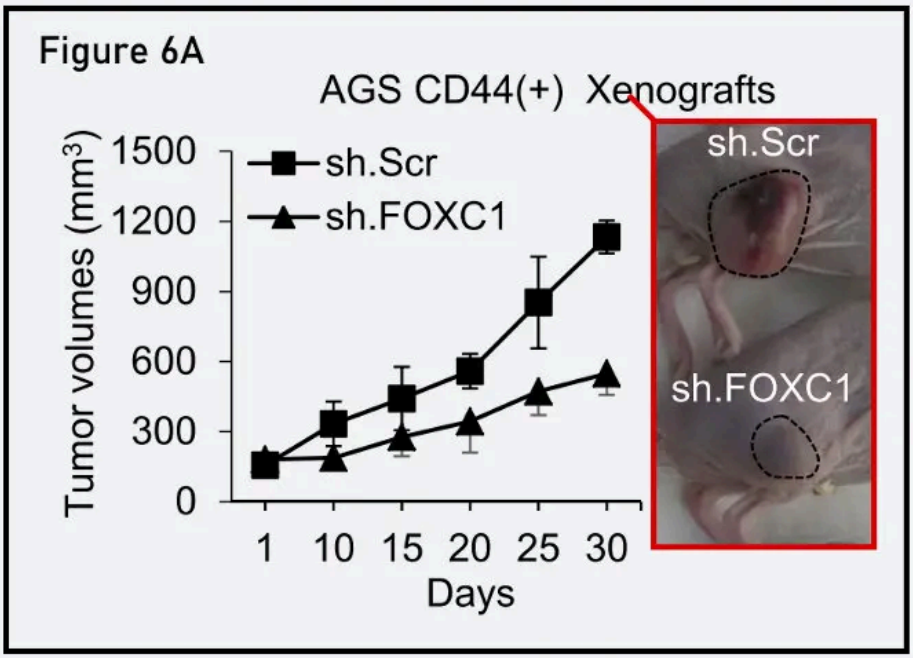
Armed with A.I.-powered detection tools, scientists and bloggers have recently exposed a growing body of such questionable research, like the faulty papers at Harvard's Dana-Farber Cancer Institute and studies by Stanford's president that led to his resignation last year.

But those high-profile cases were merely the tip of the iceberg, experts said. A deeper pool of unreliable research has gone unaddressed for years, shielded in part by powerful scientific publishers driven to put out huge volumes of studies while avoiding the reputational damage of retracting them publicly.

The quiet removal of the 2021 stomach cancer study from Dr. Yoon's lab, a copy of which was reviewed by The Times, illustrates how that system of scientific publishing has helped enable faulty research, experts said. In some cases, critical medical fields have remained seeded with erroneous studies.

"The journals do the bare minimum," said Elisabeth Bik, a microbiologist and image expert who described Dr. Yoon's papers as showing a worrisome pattern of copied or doctored data. "There's no oversight."





Biologist and blogger Sholto David annotated studies with boxes, showing how the same image of two cancerous mice presented in a 2020 study (top) was rotated and

reappeared in a 2021 study (bottom), which was later withdrawn. The same image also appeared in a third study. Sholto David

Memorial Sloan Kettering, where portions of the stomach cancer research were done, said no one — not the journal nor the researchers — had ever told administrators that the paper was withdrawn or why it had been. The study said it was supported in part by federal funding given to the cancer center.

Dr. Yoon, a stomach cancer specialist and a proponent of robotic surgery, kept climbing the academic ranks, bringing his junior researcher along with him. In September 2021, around the time the study was published, he joined Columbia, which celebrated his prolific research output in a news release. His work was financed in part by half a million dollars in federal research money that year, adding to a career haul of nearly $5 million in federal funds.

The decision by the stomach cancer study's publisher, Elsevier, not to post an explanation for the paper's removal made it less likely that the episode would draw public attention or affect the duo's work. That very study continued to be cited in papers by other scientists.

And as recently as last year, Dr. Yoon's lab published more studies containing identical images that were said to depict separate experiments, according to Dr. David's analyses.

The researchers' suspicious publications stretch back 16 years. Over time, relatively minor image copies in papers by Dr. Yoon gave way to more serious discrepancies in studies he collaborated on with Changhwan Yoon, Dr. David said. The pair, who are not related, began publishing articles together around 2013.

But neither their employers nor their publishers seemed to start investigating their work until this past fall, when Dr. David published his initial findings on For Better Science, a blog, and notified Memorial Sloan Kettering, Columbia and the journals. Memorial Sloan Kettering said it began its investigation then.

None of those flagged studies was retracted until last week. Three days after The Times asked publishers about the allegations, the journal Oncotarget retracted a 2016 study on combating certain pernicious cancers. In a retraction notice, the

journal said the authors' explanations for copied images "were deemed unacceptable."

The belated action was symptomatic of what experts described as a broken system for policing scientific research.

A proliferation of medical journals, they said, has helped fuel demand for ever more research articles. But those same journals, many of them operated by multibillion-dollar publishing companies, often respond slowly or do nothing at all once one of those articles is shown to contain copied data. Journals retract papers at a fraction of the rate at which they publish ones with problems.

Springer Nature, which published nine of the articles that Dr. David said contained discrepancies across five journals, said it was investigating concerns. So did the American Association for Cancer Research, which published 10 articles under question from Dr. Yoon's lab across four journals.

It is difficult to know who is responsible for errors in articles. Eleven of the scientists' co-authors, including researchers at Harvard, Duke and Georgetown, did not answer emailed inquiries.

The articles under question examined why certain stomach and soft-tissue cancers withstood treatment, and how that resistance could be overcome.

The two independent image specialists said the volume of copied data, along with signs that some images had been rotated or similarly manipulated, suggested considerable sloppiness or worse.

"There are examples in this set that raise pretty serious red flags for the possibility of misconduct," said Dr. Matthew Schrag, a Vanderbilt University neurologist who commented as part of his outside work on research integrity.

One set of 10 articles identified by Dr. David showed repeated reuse of identical or overlapping black-and-white images of cancer cells supposedly under different experimental conditions, he said.

"There's no reason to have done that unless you weren't doing the work," Dr. David said.

One of those papers, published in 2012, was formally tagged with corrections. Unlike later studies, which were largely overseen by Dr. Yoon in New York, this paper was written by South Korea-based scientists, including Changhwan Yoon, who then worked in Seoul.

An immunologist in Norway randomly selected the paper as part of a screening of copied data in cancer journals. That led the paper's publisher, the medical journal Oncogene, to add corrections in 2016.

But the journal did not catch all of the duplicated data, Dr. David said. And, he said, images from the study later turned up in identical form in another paper that remains uncorrected.

Copied cancer data kept recurring, Dr. David said. A picture of a small red tumor from a 2017 study reappeared in papers in 2020 and 2021 under different descriptions, he said. A ruler included in the pictures for scale wound up in two different positions.

The 2020 study included another tumor image that Dr. David said appeared to be a mirror image of one previously published by Dr. Yoon's lab. And the 2021 study featured a color version of a tumor that had appeared in an earlier paper atop a different section of ruler, Dr. David said.

"This is another example where this looks intentionally done," Dr. Bik said.

The researchers were faced with more serious action when the publisher Elsevier withdrew the stomach cancer study that had been published online in 2021. "The editors determined that the article violated journal publishing ethics guidelines," Elsevier said.

Roland Herzog, the editor of Molecular Therapy, the journal where the article appeared, said that "image duplications were noticed" as part of a process of screening for discrepancies that the journal has since continued to beef up.

Because the problems were detected before the study was ever published in the print journal, Elsevier's policy dictated that the article be taken down and no explanation posted online.

But that decision appeared to conflict with industry guidelines from the Committee on Publication Ethics. Posting articles online "usually constitutes publication," those guidelines state. And when publishers pull such articles, the guidelines say, they should keep the work online for the sake of transparency and post "a clear notice of retraction."

Dr. Herzog said he personally hoped that such an explanation could still be posted for the stomach cancer study. The journal editors and Elsevier, he said, are examining possible options.

The editors notified Dr. Yoon and Changhwan Yoon of the article's removal, but neither scientist alerted Memorial Sloan Kettering, the hospital said. Columbia did not say whether it had been told.

Experts said the handling of the article was symptomatic of a tendency on the part of scientific publishers to obscure reports of lapses.

"This is typical, sweeping-things-under-the-rug kind of nonsense," said Dr. Ivan Oransky, co-founder of Retraction Watch, which keeps a database of 47,000-plus retracted papers. "This is not good for the scientific record, to put it mildly."

Susan C. Beachy contributed research.

Benjamin Mueller reports on health and medicine. He was previously a U.K. correspondent in London and a police reporter in New York. More about Benjamin Mueller

A version of this article appears in print on , Section A, Page 1 of the New York edition with the headline: Cancer Doctor Is in Spotlight Over Bad Data