

► two years, whereas CiteScore counts the previous three.

But one significant difference leads some high-JIF journals, such as *Nature*, *Science* and *The Lancet*, to do worse in CiteScore. The new metric counts all documents as potentially citable, including editorials, letters to the editor, corrections and news items. These are less cited by scholars, so they drag down the average. *The Lancet*, for instance, drops from a healthy average of 44 in JIF — putting it in 4th position — to 7.7 in CiteScore, outside the top 200.

Such a distinction could have major consequences for the behaviour of publishers. “As there is intense competition among top-tier journals, adoption of CiteScore will push editors to stop publishing non-research documents, or shunting them into a marginal publication or their society website,” predicts Phil Davis, a publishing consultant in Ithaca, New York.

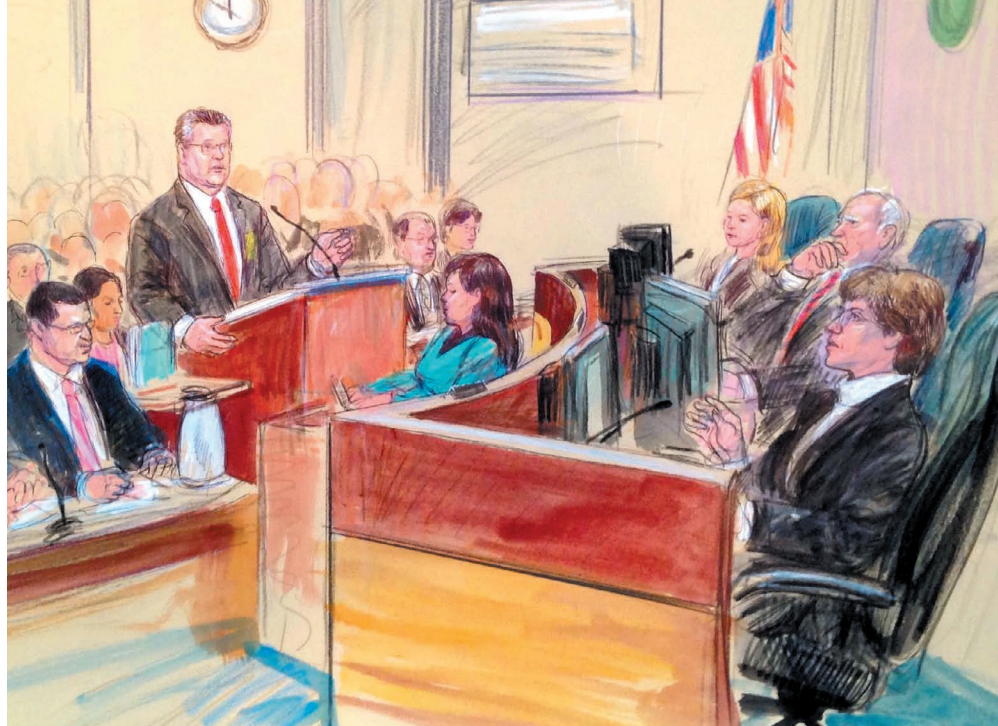
NUANCED CONTENT

The Lancet, *Nature* and other journals declined to comment on CiteScore. But Jeremy Berg, the editor-in-chief of *Science*, says that the journal is “very proud of our content that lies outside traditional research reports and articles” and that “any metric that is based on citation data alone will undervalue the impact of such non-research content”.

“The portfolio performance of all publishers may look a bit different using CiteScore metrics, including Elsevier, but all publishers gain in that they can explore the performance of more of their titles because of the broader coverage of Scopus,” says Lisa Colledge, director of research metrics at Elsevier. She says that CiteScore should be used only to compare related journals, not to compare raw scores across different fields. For example, the index ranks *The Lancet* 25th out of 1,549 ‘general medicine’ journals — putting it in the top 98th percentile of journals in that subject category.

Clarivate Analytics in Philadelphia, Pennsylvania, which bought the JIF and the Web of Science this year from Thomson Reuters, says that it doesn’t see any new insights in CiteScore. Other, more complex metrics — including several published by Elsevier and Thomson Reuters — have been developed to rank journals in the past, but none has yet proved as popular as the JIF. “If anything, another, different metric will reinforce the status that the JIF has as the definitive assessment of journal impact,” says Clarivate spokesperson Heidi Siegel.

Some even wonder whether Elsevier, which publishes more than 2,500 journals, should be producing CiteScore at all. The JIF has always been owned by non-publishers. “I question the appropriateness of a publisher getting involved with the metrics that evaluate the very content that it publishes,” says Joseph Esposito, a publishing consultant in New York City. But Elsevier says that it is “a provider of information solutions as well as a publisher”, and treats all the publishers it analyses equally. ■



Lawyers for the University of California, Berkeley, and the Broad Institute faced off in patent court.

INTELLECTUAL PROPERTY

CRISPR patent battle goes to court

Hearing focuses on use of gene editing in complex cells.

BY SARA REARDON, ALEXANDRIA, VIRGINIA

It was a tough day in US patent court for the University of California, Berkeley.

On 6 December, lawyers for the university laid out its claim to the gene-editing tool CRISPR–Cas9 during a hearing at the US Patent and Trademark Office (USPTO) — and drew intense, sometimes sceptical, questioning from the three judges who will decide the fate of patents that could be worth billions of dollars.

Berkeley and its rival, the Broad Institute of MIT and Harvard in Cambridge, Massachusetts, are each vying for the intellectual property underlying CRISPR–Cas9, which is adapted from a system that bacteria use to fend off viruses. During the hearing in Alexandria, Virginia, the USPTO judges challenged Berkeley’s central claim: that once its researchers demonstrated that CRISPR–Cas9 could be used to edit DNA in bacteria, any reasonably skilled person could have adapted the technique for use in more complex cells.

If the court decides that is true, it would invalidate the patent now held by the Broad

Institute. But the Berkeley argument is a difficult one to make, given that it hinges on “a really subjective standard” — especially when applied to extraordinarily accomplished scientists such as those at the Broad, says Jacob Sherkow, a legal scholar at New York Law School in New York City.

BYZANTINE BATTLE

The patent fight began in May 2012, when Jennifer Doudna, a molecular biologist at Berkeley, filed for a patent after her research team used CRISPR–Cas9 to alter specific stretches of bacterial DNA. In December 2012, synthetic biologist Feng Zhang of the Broad Institute filed his own patent claim, demonstrating use of the gene-editing technique in more-complex eukaryotic cells, such as those from mice and humans. Zhang asked for — and was granted — an expedited review for his patent application.

The USPTO awarded him the rights to CRISPR–Cas9 in 2014. Berkeley then asked the patent office to investigate who first invented the gene-editing technique — a process known as a ‘patent interference’. That review began in January. Over the past 11 months, the rival research institutions have filed hundreds of pages of documents with the court.

“My impression is both will end up with something.”

The 6 December hearing was the first and only time that the two sides will speak to the judges before the court rules on the patent rights. An hour before the hearing began, the line of people waiting to watch the arguments wrapped around the Christmas tree in the lobby of the USPTO and filled two overflow rooms. Each side's lawyer had only 20 minutes to present his case to the three judges.

During the hearing, the Broad's lawyer quoted liberally from news articles and interviews in which Doudna said that her lab had struggled to adapt CRISPR-Cas9 to eukaryotic cells. "This is the antithesis of something that would have been obvious," said the Broad's lawyer, Steven Trybus.

Berkeley's lawyer Todd Walters downplayed these difficulties, saying that Doudna did not immediately publish CRISPR-Cas9 to edit eukaryotic cells because she knew it would work. Once the technology's ability to edit DNA had been proven, he told the judges, "the only thing left was to do it".

A QUESTION OF INTENT

But the judges seemed to disagree, and grilled Walters far harder than they did Trybus, who represented the Broad. "I'm not buying that everyone who does an experiment believes it would work," said Judge Richard Schafer. Rather, he added, a scientist such as Doudna may simply hope that her research will succeed.

This exchange suggests that Berkeley will have a hard time convincing the court that Doudna expected CRISPR-Cas9 to work in eukaryotes, Sherkow says. The university's lawyers "were trying to clarify what a biologist in 2012 would have contemplated", he notes.

But biochemist Dana Carroll of the University of Utah in Salt Lake City, who wrote a declaration to the court on Berkeley's behalf, disagrees. "To embark on a project takes a certain amount of time, effort and money," he says. "I don't think you'd do that unless you had some expectation of success." He points out that several other groups began working on CRISPR-Cas9 in eukaryotes at the same time as Zhang did.

Several experts who watched the proceedings say that the Broad's prospects look brighter now, given the judges' heavy questioning of Berkeley's lawyer. "My impression is both will end up with something," says legal scholar Robert Cook-Deegan of Arizona State University's campus in Washington DC.

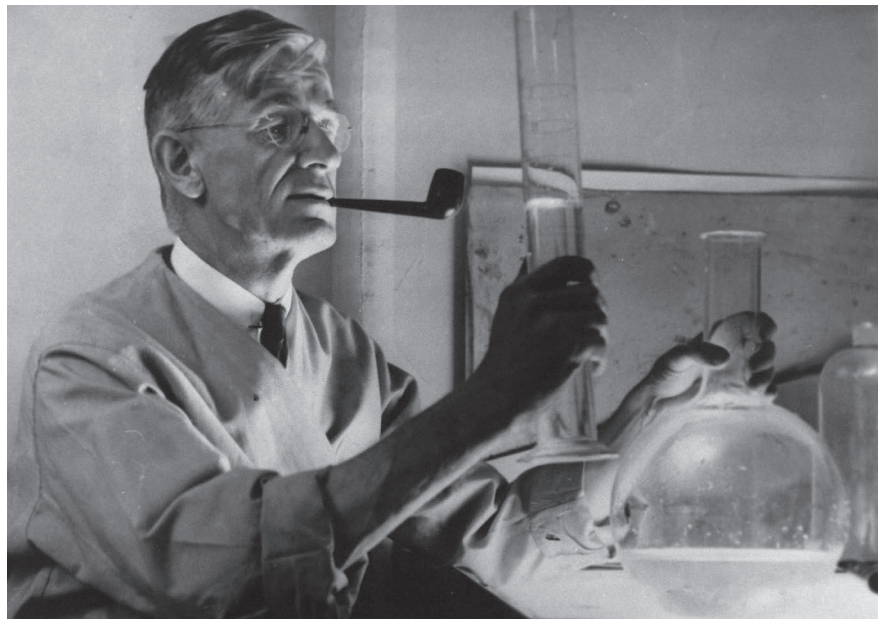
The Broad has hedged its bets by filing 13 patents related to CRISPR. Several of these deal with an alternative CRISPR system in which the DNA-cutting enzyme is taken from a different species of bacteria. Because it was developed independently, Sherkow doubts that Berkeley could claim any rights to it.

He expects that the USPTO will decide the case in the next two months, although there is no deadline by which it must do so. ■

POLICY

Top US science job still in question

President-elect Donald Trump has given no clues as to whether he will appoint a science adviser.



Electrical engineer Vannevar Bush became the first US presidential science adviser in the 1940s.

BY ALEXANDRA WITZE

US president-elect Donald Trump has chosen people for key jobs overseeing national security, defence and environmental policy. But he has not addressed whether he will fill the most important job in US science: presidential science adviser.

Historically, many incoming presidents — who are elected in November — have designated a science adviser in December, as they move to the White House. But Trump's transition team has not contacted the White House Office of Science and Technology Policy (OSTP), which the science adviser leads, to discuss the changeover. Many researchers worry that if Trump does not pick an adviser soon, science will have a much weaker voice during the next four years.

"I have some questions as to whether Trump is going to want a science adviser at all," says Albert Teich, a science-policy expert at George Washington University in Washington DC. "He doesn't like briefings, he doesn't like to listen to people. I can't imagine that whoever he appoints would

have a very influential position."

Still, some of Trump's earliest moves as president may involve scientific topics. He has said that on his first day in office, 20 January, he will repeal many of the executive orders that Barack Obama has used to set policy — including those on energy and climate.

Getting a science adviser in place early would help Trump to understand the scientific implications of such issues, says

"I can't imagine that whoever he appoints would have a very influential position."

Neal Lane, a physicist at Rice University in Houston, Texas, who advised President Bill Clinton from 1998 to 2001. "The president could make

really good use of advice from someone he has chosen who's knowledgeable about science and technology," Lane says.

Given Trump's lack of ties to the academic or scientific communities, some speculate that he will seek technical advice from business or high-tech leaders. His transition team includes Silicon Valley billionaire Peter Thiel, who — among other things ▶