



Claudio Hetz leads a research team at the University of Chile in Santiago.

## CHILEAN RESEARCHERS UPSET FOLLOWING PROBE OF STAR NEUROSCIENTIST

Claudio Hetz was cleared of fraud – but some researchers fear his practices set a poor precedent.

By Emiliano Rodríguez Mega

**A** high-profile neuroscientist at the University of Chile in Santiago has been found not guilty of scientific fraud – although an investigation revealed that there were altered images in a number of his research publications. Some members of Chile’s research community say, in their opinion, that the scientist’s actions set a poor example for researchers in the country, and question why his punishment wasn’t harsher.

A committee investigating the case detected “patterns of behaviour that were objectionable and contrary to scientific ethics”, but concluded that there was no evidence that the scientist, Claudio Hetz, had deliberately falsified data to change the conclusions of experiments – a distinction that cleared him of fraud. He’s been allowed to keep his job and will continue to run a research group, although it will be downsized and his publications monitored.

The case comes as Chile attempts to correct ethics lapses within its government and society, and reconcile inequality among its people, including academics, through social and political change. The country is in the

process of rewriting its constitution, which dates from the military dictatorship that ended in 1990.

Hetz, whose laboratory studies neurological diseases such as Alzheimer’s, is one of the most cited researchers in his field. He is also director of the Biomedical Neuroscience Institute at the University of Chile; he was deputy director from 2011 to 2018 under Andrés Couve Correa, the country’s current science minister. Hetz tells *Nature* he accepts full responsibility, but points out that any image manipulations did not ultimately affect his results. “There is no fraud,” he says. “The papers are valid.”

### Manipulations uncovered

The altered images came to light when commenters discussed them on PubPeer, a website for post-publication review. In January this year, science blogger Leonid Schneider wrote about images in more than 20 articles published between 2002 and 2021, some of them when Hetz was a junior scientist in Chile, Switzerland and the United States, and others after he set up his own lab in 2008.

In March, the University of Chile commissioned an advisory committee to investigate his work. The four-person panel, made up of

scientists either from Hetz’s university, but outside his department, or from independent institutions, analysed 18 of Hetz’s papers. In a ten-page report, the committee says that no fraud occurred, but Hetz’s actions reveal “an enormous carelessness and lack of rigor” (see [go.nature.com/3djjeth](https://go.nature.com/3djjeth)). In at least two of his early papers, Hetz altered images to add or remove cells “for aesthetic reasons”. Committee members also found that images in several recent papers contained “undeclared manipulations”, such as bands or lanes in western blots and electrophoresis gels that were cropped and pasted into different positions.

The committee declined to comment on its findings to *Nature*. “The report speaks for us,” said Patricio Aceituno, an emeritus member of the university’s physical sciences and mathematics department who coordinated the committee, in an e-mail.

The months-long investigation – and the media attention it received in Chile – has personally affected Hetz and his lab members, he says, noting that some of them are still on medical leave owing to mental-health problems that stem from the public exposure and criticism. He acknowledges that the image manipulations shouldn’t have happened, and even though he notes that he did not personally perform some of the experiments in question, he says that, as group leader, he should have noticed and flagged the problems.

### Improving lab standards

Some members of Chile’s research community take issue with the investigation’s conclusions, because this isn’t the first time Hetz has been accused of altering published images. In 2012, the University of Chile carried out an investigation after a now-extinct blog suggested that there was evidence of image manipulation in at least six of his papers. That investigation,

**“This was enabled because, in Chile, we built a society and a culture where ethics is no longer the rule.”**

too, found that Hetz was not guilty of scientific fraud, but that he had committed an abnormally high number of “unintentional” errors. As a result of that incident, Hetz implemented measures to improve lab standards, including a policy to regulate how team members used their research logbooks, and the creation of a lab-wide repository where members could back up each paper’s raw data.

Looking back, however, Hetz sees that these actions “were not enough”. “It’s been super frustrating,” he adds.

In response to the latest investigation, Hetz says: “Our attitude is to be transparent.” On his lab website and on PubPeer, he and his

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co-authors have addressed image modifications in at least 16 papers, providing original data for several more and apologizing for mistakes. He has also requested image corrections at various journals; most editors have accepted them, although some deemed them unnecessary, according to screenshots of e-mails posted on the lab website. Only one image has been retracted.

Hetz tells *Nature* he plans to make changes to his lab, aimed at ensuring his science is “bullet proof”. One measure is to reduce his lab from 21 people to 18 by March next year. The university has put in place an external team of researchers that will review the lab’s results and make sure they’re consistent with the raw data before permitting the team to submit them for publication. The university’s school of medicine, with which Hetz is affiliated, will institute scientific-integrity training for its researchers and students.

### A time of transformation

But some Chilean researchers are upset about the outcome. They say Hetz’s actions go against scientific practice and ethics, and that the consequences are not harsh enough. “I think he should receive an exemplary sanction” such as temporarily being barred from mentoring new students, says Ximena Báez, a biotechnologist at the Federico Santa María Technical University in Valparaíso, Chile, who is also president of the National Association of Postgraduate Researchers in the country.

For Adriana Bastías, a plant geneticist at the Autonomous University of Chile in Santiago who is also the president of the Chilean Network of Women Researchers, the fact that Hetz was investigated twice and not punished in any significant way, in her view, “means that when you have power, publications, and you are a great scientist, you are not investigated or sanctioned in the same way” as early-career scientists or less prestigious researchers might be. She thinks these people would probably be expelled or suspended.

Flavio Salazar, an immunologist and vice-rector for research and development at the University of Chile, who co-commissioned the investigation, acknowledges that the case has caused a fierce debate. He condemns Hetz’s actions. But he says the committee’s findings must be upheld, and thinks that having made the report public “generates a kind of moral sanction, which is not minor”.

Others think the case sets a poor precedent, particularly at a time when journal publishers are trying to rein in the growing problem of image manipulation by issuing guidelines on how to deal with incidents ranging from data “beautification” to fabrication with an intent to mislead. C. K. Gunsalus, a research-integrity specialist at the University of Illinois at Urbana-Champaign, thinks Hetz’s actions damage the education of early-career scientists and

undermine trust and accountability in the scientific process. “When someone persists with a pattern of behaviour over a long period of time that results in untrustworthy work, even after an intervention, it is hard from a distance to see that as other than a deliberate set of choices or a reckless disregard for scientific integrity,” says Gunsalus, who read a translated version of the 2021 committee findings at *Nature*’s request.

“I think these are very unfair opinions,” Hetz says. “I actively take action to improve Chilean science.” He says that his lab probably has some of the highest quality standards in the country, and adds that as director of the

Biomedical Neuroscience Institute, he has promoted initiatives to improve the use of logbooks and create systems to back up data.

Some scientists worry that the case is emblematic of Chile’s current struggles. “What [Hetz] did is absolutely questionable,” says Mercedes López Nitsche, a clinical immunologist at the University of Chile. “But we must not forget that this was enabled because, in Chile, we built a society and a culture where ethics is no longer the rule.”

For now, Hetz says he’s ready to move on. “I’m really tired,” he says. “I consider this a closed chapter; now comes a process of learning and improvement.”

## BURNT SEEDS SHOW PEOPLE USED TOBACCO 12,000 YEARS AGO

Earliest evidence that hunter-gatherers chewed or smoked the plant has been found at a Stone Age site.

By Tosin Thompson

**A**rchaeologists have uncovered evidence that hunter-gatherers in North America were using tobacco around 12,300 years ago – 9,000 years earlier than was previously documented.

Tobacco use spread worldwide after contact between European explorers and Indigenous

people in North America in the fifteenth century. But researchers debate precisely how and when tobacco plants (*Nicotiana* spp.) were first domesticated.

Now, Daron Duke and his colleagues at the Far Western Anthropological Research Group in Davis, California, have discovered the oldest direct evidence of tobacco use at a hunter-gatherer camp in Utah’s West Desert. They published the findings on 11 October in



Excavations at the site in Utah, where tobacco seeds were found in a 12,300-year-old hearth.