

# Tougher action needed in the fight against scientific fraud

November 9 2016, by Marilyn McMahon

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Credit: AI-generated image ([disclaimer](#))

What is there to stop someone publishing scientific research that is based on no actual research or uses fake evidence to support their claims?

If the risk to reputation and all that follows isn't enough to deter someone from such scientific fraud, then what other steps can science

take to maintain the integrity of any published [research](#)?

The criminal prosecution of Dr Caroline Barwood should serve as a warning to researchers who might be tempted to engage in such actions. She was [convicted last month](#) of fraudulently applying for research grants.

The [criminal charges](#) for fraud and attempted fraud that were brought against Barwood were based mainly on her attempts to obtain funding for research investigating a treatment for Parkinson's disease.

The research was [allegedly conducted with Professor Bruce Murdoch](#) through the Centre for Neurogenic Communication Disorders Research at the University of Queensland.

## **Whistleblower prompts investigation**

In 2012, an unidentified whistleblower contacted the University of Queensland about Murdoch and Barwood's Parkinson's study. After an internal investigation the university discovered multiple irregularities, no primary data from the research and [no evidence that the research](#) had actually been conducted.

Publications based on the research had appeared in several prominent journals. The university informed the journals and [four papers have now been retracted](#).

Both Barwood and Murdoch resigned from the university. But the university referred the matter to Queensland's Crime and Corruption Commission. After a lengthy investigation, the [Commission recommended that criminal charges](#) be laid against both researchers.

In March 2016 Murdoch [pleaded guilty to 17 fraud-related charges](#). He

was given a two year suspended sentence. The sentencing magistrate found that there was no evidence Murdoch had conducted the clinical trials on which his findings, and some of his publications, were allegedly based.

A critical feature of the prosecution was that both public and private research money had funded the research.

Barwood's conviction followed later in 2016. She was [convicted of five charges](#) and sentenced to two years imprisonment, also suspended. She may face a further trial because the jury couldn't reach agreement on another two charges.

These cases may be rare but mark a willingness to use [criminal prosecutions](#) to deal with researchers who engage in fraud.

## **Scientific fraud! Call the police**

But is hitting researchers for fraud over their applications for funds enough to deter the scientific fraud itself?

In a hard-hitting editorial in 2013, the [journal Nature said](#):

"Science likes to shelter its crooks with euphemisms. The prefix 'research' softens fraud, and to deliberately obtain public money through deception gets labelled misconduct, among other things. This reflects the fact that the crime is viewed as being against professional standards rather than against the laws of wider society."

Several prominent commentators, including a former [editor of the \*British Medical Journal\*](#) have joined the call for scientific fraud to be recognised as a criminal offence.

The re-framing of some forms of scientific misconduct as criminal fraud recognises that scientific fraud involving the fabrication of research and/or results in circumstances where private or public funding has been sought or obtained is similar to other forms of fraud.

It involves dishonesty and deception for the purpose of obtaining money or other financial advantage. It is immaterial that the benefit may not have been for the direct, personal benefit of the researcher.

It also recognises that like other forms of fraud, scientific fraud requires careful, detailed investigation and the obtaining of evidence. Police and other prosecuting authorities (such as the Crime and Corruption Commission) are best able to conduct this sort of investigation and gather this information.

## Overseas examples

The first prosecution for scientific fraud appears to have been in the United States in 2006. [Eric Poehlman was found guilty of fraud](#) and sentenced to prison for a year and a day after he falsified results from his obesity research. Poehlman had received significant amounts of [research funding](#).

Perhaps the most famous case in recent years involved Dong-Pyou Han, a biomedical scientist at Iowa State University. Han [falsified the results of several experiments](#) involving the development of a vaccine for HIV.

He eventually pleaded guilty to making false statements to obtain [research grants](#). He was sentenced to 57 months in prison and ordered to pay back US\$7.2 million in grant funds that he had fraudulently obtained.

All these cases involved intentional deception. They were not simply

lapses in scientific standards or based on disputes about appropriate methodology or analysis.

A further troubling feature is that many cases involved eminent or promising researchers from leading institutions and universities, including now the University of Queensland.

## **Run them out of town**

Criminal prosecutions for academic fraud are rare. A researcher who is found to have engaged in fraud will more likely lose their job, suffer reputational damage, be de-registered (if they are a registered health care professional), have publications retracted and find it difficult to obtain further research funding.

But these traditional strategies for dealing with scientific fraud have significant limitations.

The potential lack of institutional integrity is foremost. Universities and other institutions are sometimes more concerned with protecting their own reputations rather than properly investigating potential fraud.

That said, the decisive action taken by the University of Queensland demonstrates a commitment to high research standards.

The retraction of published papers based on fraudulent research is fraught with problems. In an editorial published in 2013 [the journal Nature Medicine noted](#) a lack of co-operation by the researcher's institution in investigating cases of alleged fraud and threats of legal action by the suspect researcher made retractions difficult. It said:

"[...] our experience on this front has been largely disappointing."

There are now promising alternatives to criminal prosecution and traditional sanctions. They have potentially broader impact because they are not restricted to research which has been funded and they come from within the scientific community itself.

These initiatives include some journals now requiring authors to submit their raw data before publication is considered, and the website [Retraction Watch](#) which monitors fraud by identifying scientific articles that have been retracted.

Also, a [reproducibility initiative](#) by Science Exchange encourages researchers to submit their experiments and results and have them replicated by independent researchers. This provides another means for ensuring research integrity.

## **Do criminal prosecutions work?**

Criminal prosecutions are certainly an appropriate strategy for dealing with some forms of scientific fraud. But they are not a panacea.

At best, they function as an additional mechanism for pursuing egregious cases where researchers have obtained, or tried to obtain, research funding based on non-existent studies or results that has been altered.

In these cases the [scientific fraud](#) clearly constitutes criminal conduct and should be prosecuted as such.

But in many instances the traditional regulatory mechanisms and sanctions, in conjunction with newer initiatives to more closely monitor research, will still be the primary mechanisms for ensuring the integrity of scientific research.

This article was originally published on [The Conversation](#). Read the

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Provided by The Conversation

Citation: Tougher action needed in the fight against scientific fraud (2016, November 9)  
retrieved 12 May 2024 from <https://phys.org/news/2016-11-tougher-action-scientific-fraud.html>

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