

Research misconduct in Australia

Part 1: The case for an independent research integrity watchdog

Australia has no independent body to investigate allegations of misconduct in scientific research, unlike most countries with developed research sectors. Research institutes largely investigate allegations themselves, leading to potential conflicts of interest. A research watchdog is needed to ensure the integrity of Australian science.

Discussion paper

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November 2023

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ISSN: 1836-9014

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Summary

In contrast to most countries with developed research sectors, Australia does not have an independent authority with the power to address allegations of research misconduct. Instead, under the Australian Code for the Responsible Conduct of Research 2018 (the Code), the investigation of potentially dangerous or unethical research relies on self-regulation. Australia's research institutions, including its universities, have full discretion to decide whether or not to investigate allegations of research misconduct. Investigations that do take place can be entirely internal, their findings do not have to be made public, and the use of the term 'research misconduct' to describe major breaches of the Code is optional – in fact, the Code does not even clearly define what constitutes 'research misconduct'. Appeals against investigation outcomes can only be made on procedural grounds through the Australian Research Integrity Commission (ARIC). Appeals based on merit or evidence cannot be considered. This approach has raised major concerns regarding conflicts of interest, inadequate penalties, lack of transparency, and flawed appeals processes.

The Australian Academy of Science has started making steps towards the establishment of a body, perhaps to be called Research Integrity Australia (RIA), that would oversee research misconduct in Australia. Documentation detailing its framework has not yet been made available to the public.

Progress on a research integrity body is welcome and overdue. Over 500 Australian academic papers have been retracted over the past 20 years. Research misconduct has consequences, including risks to patient health, misappropriation of research funding, and the obstruction of progress on other research.

This paper is Part 1 of a two-part series that examines research misconduct in Australia, and recommends how to fix it. This paper explores four well-documented examples of research integrity controversies that highlight the kind of issues an Australian research watchdog could consider examining:

- a case at the University of NSW in which claims about data that led to clinical trials of a skin cancer drug had been misrepresented
- findings of research misconduct by a researcher at QIMR Berghofer Medical Research Institute – this case was referred to Queensland's Crime and Corruption Commission (CCC)
- concerns that a researcher at Swinburn University's School of Engineering had falsified, duplicated and plagiarised results that led to the retraction of 96 publications

- allegations that doctored images were used in articles based on research conducted at Macquarie University's Centre for Motor Neurone Disease (MND) Research.

Part 2 in the series – *Recommendations for Creating a World-leading Research Integrity Watchdog* – makes nine suggestions for the design of an Australian watchdog that are informed by an analysis of five prominent overseas bodies from the USA, Denmark, the Netherlands, Germany and Sweden.

Incidents of research misconduct could possibly be attributed to the 'publish or perish' culture prevalent in Australian academia. Fierce competition for funding incentivises the rapid turnover of high-impact publications to secure future employment and career success. This commodification of authorship could tempt some researchers to compromise on research integrity standards and cut corners to gain a competitive edge. Some have suggested that this problem could be alleviated by setting lifetime word limits for publications, introducing a limit on the number of papers that can be listed on grant applications per year, and mandating that CVs include a list of academic retractions along with an explanation. Australia's two major research funding bodies – the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC) – award almost \$1.8 billion in grants each year.

For all of these reasons, Australia needs to establish a genuinely independent body tasked with ensuring that investigations into research misconduct are impartial and transparent, and that researchers involved in questionable practices face appropriate disciplinary measures. A clear definition of research misconduct that covers fabrication, falsification and plagiarism is also needed. By establishing an independent research integrity watchdog, Australia can align with global standards and enhance public trust in its research sector.

Introduction

Unlike most other countries with established research industries, Australia does not have an independent national regulator to handle cases of research misconduct. The United Kingdom, USA, Japan, China, Canada and 23 European nations all have research integrity watchdogs to oversee allegations of research misconduct. However, Australia persists with a self-regulation model in which the research organisation involved is responsible for investigating, reporting and disciplining researchers who are accused of engaging in spurious research practices. This system gives rise to a conflict of interest. Research institutions are not incentivised to find instances of misconduct because doing so could risk their reputation and ability to attract funding.

The lack of adequate oversight has had far-reaching consequences. Aside from risking people's health and wellbeing, there is a possibility that hundreds of millions of dollars in publicly-funded grants have been wasted, syphoning funds away from honest and more deserving researchers. This leaves space for bad actors to produce low-quality work that can hinder scientific progress and cause other researchers to chase false leads. In the worst cases, questionable research can even give rise to dangerous conspiracy theories. Allegations of research misconduct that involve concerns of potential fraud have even been referred to wider public sector integrity watchdogs. However, these bodies may lack the primary expertise and specialised skills necessary to handle such cases.

The way Australia regulates research misconduct falls short of international standards and, if credibility and trust in Australian research is to be ensured, Australia should establish a research integrity watchdog. The Australian Academy of Science is currently developing a proposal for a regulatory framework for all publicly-funded research. Although the exact nature of this model is yet to be confirmed, it will need to be given sufficient authority and scope to effectively tackle research misconduct in Australia. The proposed framework for the body – 'Research Integrity Australia' – is discussed in more depth in Part 2 of this series.¹

This paper (Part 1) discusses four prominent research integrity controversies to demonstrate the failings of the current Australian framework and show why an independent research integrity watchdog is needed.

¹ Scicluna (2023) *Research misconduct in Australia Part 2: Recommendations for creating a world-leading research integrity watchdog*, <https://australiainstitute.org.au/report/recommendations-for-creating-a-world-leading-research-integrity-watchdog>

What is research misconduct?

In most other countries that have an independent national regulator, definitions of research misconduct often distinguish between scientific misconduct and other questionable research practices. Using the highly regarded Danish Committee on Research Misconduct as an example, scientific misconduct is recognised in Danish law as **fabrication**, **falsification**, and **plagiarism (FFP)** which is “committed intentionally or with gross negligence when planning, performing or reporting research.”² The committee uses the following specific definitions:

- **Fabrication:** Undisclosed construction of data or substitution with fictitious data.

Example: Making up data for experiments that never happened, or patients that never existed.

- **Falsification:** Manipulating research material, equipment or process, as well as changing or omitting data or results, making the research misleading.

Example: Altering numbers from an actual experiment to appear higher or lower to achieve a desired outcome.

- **Plagiarism:** Appropriation of other people’s ideas, processes, results, texts or specific concepts without giving due credit.

Example: Copying and pasting a significant portion of someone else’s work and passing it off as one’s own.

But just what constitutes research misconduct in Australia is poorly defined.

Government-funded research in Australia is supported by two major funding bodies: the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC). The ARC is a cross-disciplinary funding agency that covers areas including the social sciences, engineering, humanities and technology. The NHMRC focuses specifically on funding health and medical research, including areas such as epidemiology, biomedicine, clinical trials, public health, and healthcare delivery. In 2021-2022, the ARC awarded \$803.9 million in research grants for over 1,100 new research projects, and the NHMRC awarded 715 new project grants totalling \$971.1 million.^{3,4} Research that is funded by these entities must comply with the ‘The Australian Code for the Responsible Conduct of Research 2018

² Danish National Research Foundation (2021) *Research integrity*, <https://dg.dk/en/research-integrity/>

³ Australian Research Council (2022) *Annual report 2021–22*, <https://www.arc.gov.au/sites/default/files/2023-02/ARC%20Annual%20Report%202021%E2%80%9322.pdf>

⁴ National Health and Medical Research Council (2022) *Annual report 2021–22*, <https://www.nhmrc.gov.au/about-us/publications/annual-report-2021-22>

(the Code),⁵ but its definitions are vague. The six-page document includes a set of principles and responsibilities that characterise “an honest, ethical and conscientious research culture.”

According to a guide that accompanies the Code, research misconduct is a “serious breach of the Code which is also intentional or reckless or negligent”, but this is only a “recommended” definition.⁶ This guide contains a non-exhaustive list of examples of breaches, which include (but are not limited to): not meeting research standards; fabrication, falsification, misrepresentation; plagiarism; research data management; supervision; authorship; conflicts of interest; and peer review.

The guide emphasises that breaches of the Code occur on a spectrum, and that a major breach typically requires an investigation, while a minor breach “may be addressed at the preliminary stage.”⁷ The decision regarding whether a breach should be considered a serious or minor breach is solely at the discretion of the research institution. Even when research institutions do make such a finding, they are under no obligation to investigate or make findings public. The institution will typically commence a preliminary investigation, which, based on the evidence and the expertise of those involved, may result in a comprehensive investigation conducted by a panel of researchers, either internal or external to the institution. Alternatively, the institution may choose to dismiss the allegations at the preliminary investigation stage. The Code explicitly states that the use of the term ‘research misconduct’ is optional: “To acknowledge the egregious nature of some serious (major) breaches, institutions **may decide** to refer to those breaches of the Code as ‘research misconduct’.”⁶ Unlike in Danish law, these terms are not further defined.

This paper examines ‘serious breaches of the Code’ that involve FFP in the Australian research community.

⁵ National Health and Medical Research Council (NHMRC), Australian Research Council (ARC) and Universities Australia (UA) (2018) *Australian Code for the Responsible Conduct of Research 2018*, <https://www.nhmrc.gov.au/about-us/publications/australian-code-responsible-conduct-research-2018>

⁶ NHMRC, ARC and UA (2018) *Guide to managing and investigating potential breaches of the Australian Code for the Responsible Conduct of Research 2018*, p 6, <https://www.nhmrc.gov.au/file/14385/download?token=k5VPLebS>

⁷ NHMRC, ARC and UA (2018) *Guide to managing and investigating potential breaches of the Australian Code for the Responsible Conduct of Research 2018*, p 5.

Problems with how Australia manages research misconduct

Without an independent research integrity watchdog, Australia has no mechanism of oversight to ensure researchers and their institutions are complying with the Code. While the aspirations of the Code are widely supported and uncontroversial, without funding bodies that actively enforce its principles, it has limited impact. With an estimated one in 50 papers suspected to involve deliberate modification, falsification, or fabrication of data,⁸ along with over 500 retractions of Australian research papers in the past 20 years,⁹ it is crucial for Australia to re-evaluate its approach to addressing research misconduct.

Self-regulation and internal investigations

Under the current self-regulation model, research institutions are responsible for managing allegations of research misconduct and breaches of the Code. It is entirely consistent with the Code for research institutions to conduct and manage their own internal investigations, clear their researchers of research misconduct, and sweep matters of research integrity under the rug. In Australia, complaints about the conduct of research or breaches of the Code are typically raised with an institution's Designated Officer (DO). The DO is usually a senior internal staff member such as the Deputy or Pro Vice-Chancellor, a senior researcher, or staff member at the institution's research integrity office. The DO assesses whether the complaint is relevant to a potential breach of the Code. If so, the matter proceeds to a preliminary assessment, conducted by an Assessment Officer (AO) who, also a senior staff member, gathers and analyses the relevant facts and information. The AO then provides written advice back to the DO. Ultimately, the DO holds the final authority to determine whether the allegation progresses to an investigation.

The DO has significant input into the investigation. It is their responsibility to determine the terms of reference, as well as the number and composition of panellists for the inquiry. They can decide whether the panel will consist of internal staff members or individuals external to the institution. It is conceivable that an investigation could be conducted by an inquiry panel consisting of only one staff member from the same research institution.

Once formed, the panel will come to a conclusion about whether a breach of the Code occurred, and will provide a written report to the DO, including recommendations based on

⁸ Bik, Casadevall, and Fang (2016) 'The prevalence of inappropriate image duplication in biomedical research publications,' *American Society for Microbiology*, <https://doi.org/10.1128/mbio.00809-16>

⁹ *The Retraction Watch Database*, <http://retractiondatabase.org/RetractionSearch.aspx>

their findings. The DO will review the panel's evidence and consider its implications. If they decide disciplinary action is needed, the DO will present the report to the Responsible Executive Officer (REO), who is typically the institution's Director or Chief Executive Officer. Ultimately, the REO holds the final responsibility for the investigation. If they agree that a breach has taken place, they will decide the institute's response according to the Code. The REO is not obliged to take any action based on the inquiry panel's findings. However, this is only a recommended approach for managing and investigating a potential breach of the Code, enabling each research institution to develop its own distinct research misconduct procedure.

This system can create a conflict of interest where an internal panellist with an existing relationship with the subject of the inquiry may be biased towards preserving personal relationships or professional collaborations. Additionally, internal panellists may face pressure or feel compelled to deliver a favourable outcome for the institute to maintain a positive relationship with their employer and safeguard their positions.

Lack of transparency

Once an inquiry has commenced, research institutions are required to maintain secrecy according to the Code guide, which states, "investigations must be ... confidential". This raises significant transparency and accountability concerns. Institutions are not obliged to publicly disclose inquiry outcomes, and are instead given the option to merely "consider whether a public statement is appropriate to communicate the outcome of an investigation". Rather than handling allegations of research misconduct transparently and openly, institutions may choose to transfer responsibility by facilitating the researcher's move to an external position to avoid investigation proceedings that could reflect on them poorly.

Research institutions have an incentive to keep allegations of research misconduct confidential to protect their researchers and uphold their reputations. Consequently, cases of research misconduct often come to light only after whistleblowers turn to the media as a last resort once they have exhausted all internal channels. Taking this action carries significant risk to the whistleblower. It places their career in jeopardy, particularly considering how weak whistleblower protections are in Australia.

The secrecy around investigations also limits the amount of national data that can be collected on the nature and extent of misconduct, making it difficult for decision makers to understand the scope and impact of the problem.

Inability to appeal inquiry outcomes

Under the current Australian model, appealing the outcome of an investigation is near impossible. Requests for a review of an investigation are submitted to the Australian Research Integrity Committee (ARIC), which was jointly established by the ARC and the NHMRC in 2011.¹⁰ This committee reviews and makes recommendations about the processes research institutions use to evaluate breaches of the Code. Appeals to ARIC can only be made on the grounds of challenging the investigation process itself (procedural fairness), regardless of whether new information or evidence comes to light. However, without the public disclosure of inquiry findings, challenging a decision based on *any* grounds would be difficult.

Members of the Australian Academy of Science have been working behind the scenes, consulting and collaborating with relevant stakeholders to design a new body with power to “provide oversight and assurance about the management of allegations of research misconduct.”¹¹ The scope and authority of this body, to be named Research Integrity Australia (RIA), have not yet been defined and little information is currently available to the public.

¹⁰ Australian Research Council (2022) *Australian Research Integrity Committee (ARIC)*, <https://www.arc.gov.au/about-arc/program-policies/research-security-and-integrity/research-integrity/australian-research-integrity-committee-arica>

¹¹ Chubb (2023) *Understanding the research integrity environment*, WEHI seminar, https://www.youtube.com/watch?v=J1Ak20A_vgw

Research integrity controversies in Australia

This section provides a selection of well-documented research integrity controversies that have been covered both in the Australian media and in published reports over the past decade. The cases highlight the inconsistent and ad hoc approach with which research integrity issues are handled in Australia. This demonstrates the urgent need for the formation of a transparent, robust and independent research integrity watchdog with its own accessible and responsive appeals process.

Investigations into experimental skin cancer drug

In 2010, Dr Ying Morgan, a postdoctoral researcher at the University of New South Wales (NSW), raised concerns that data underpinning an experimental skin cancer drug had been misrepresented in a paper that served as the foundation for the initiation of clinical trials of the drug in humans.^{12,13} Dr Morgan brought her concerns, which focused on Professor Levon Khachigian, a prominent molecular cell biologist and head of UNSW's Vascular Biology and Translational Research Laboratory, to Deputy Vice-Chancellor of Research at UNSW, Professor Les Field.¹²

Professor Field oversaw a preliminary investigation into the accusations, which cleared Professor Khachigian of research misconduct.¹² Following this preliminary investigation, a second investigation was commissioned by UNSW, this time with a panel comprised of scientists from outside the university. The panel also found no evidence of research misconduct. The clinical trial was approved, and nine skin cancer patients were injected with the experimental drug, known as Dz13, in 2010 and 2011.¹³

In 2013, a separate investigation was prompted after eminent molecular cell biologist and research integrity campaigner, Professor David Vaux, raised similar concerns over image duplications and alterations in the same original paper.¹² This came around the same time as Dr Morgan renewed pressure to investigate the issue. The inquiry panel again cleared Professor Khachigian of research misconduct, but UNSW suspended the follow-up clinical trial of Dz13. In October 2013, Professor Khachigian was placed on leave without pay during

¹² Scott and McGregor (2013) 'Trials of skin cancer drug DZ13 suspended pending investigation at UNSW', *ABC News*, <https://www.abc.net.au/news/2013-08-12/trials-of-skin-cancer-drug-dz13-suspended-amid-misconduct-claims/4881622>

¹³ Worthington and Taylor (2019) 'UNSW skin cancer researcher Levon Khachigian hit with string of retractions', *ABC News*, <https://www.abc.net.au/news/2019-10-17/unsw-skin-cancer-levon-khachigian-allegations-and-retractions/11585768>

these investigations, and \$8 million in NHMRC grant funding was suspended.^{14,15} The proceedings of this inquiry were covered in news reports by the ABC.^{12,13,14}

These investigations garnered criticism from witnesses and former inquiry panellists. Two witnesses told the ABC they felt they were “not able to give a full and detailed account” during the first inquiry.¹⁴ During the second inquiry, Dr Morgan was not interviewed. Similarly, Professor Vaux described his inability to fully voice his concerns to the panel because of the narrow terms of reference imposed by UNSW.¹⁴ A panellist for one of these inquiries, Professor Peter Brooks, told the ABC he also felt constrained by the university’s strict terms of reference. He expressed frustration that he was unable to consider other complaints against Professor Khachigian, which were being investigated by separate external panels, when making his final decision.¹³ A member of another inquiry panel, Professor Bob Williamson, claimed that UNSW directed the panel to only attribute general ‘misconduct’ to Prof Khachigian, rather than research misconduct.¹³ This was reflected in a UNSW press release related to the inquiry, which stated that “there were no findings of ‘research misconduct’.”¹⁶

When the Dz13 clinical trial was authorised and during the preliminary investigation, Professor Field served as the chairman of NewSouth Innovations, a UNSW spin-off that owned the experimental drug.^{17,18} NewSouth Innovations has since been dissolved.

Professor Khachigian was subject to a total of five investigations by independent external panels and was cleared on all occasions.¹³ He was reinstated and his NHMRC funding restored in May 2015.^{14,15}

In 2019, Professor Vaux, dissatisfied with the way UNSW handled the case, hired legal representation to present a brief of evidence to the NSW Independent Commission Against Corruption (ICAC).¹³ ICAC declined to pursue the case.¹⁹

¹⁴ Scott (2016) 'University of NSW defends handling of investigation into prominent scientist Levon Khachigian', *ABC News*, <https://www.abc.net.au/news/2016-01-15/health-body-to-review-misconduct-probe-into-cancer-scientist/7089280>

¹⁵ Oransky (2019) 'An Australian university cleared a cancer researcher of misconduct. He’s now retracted six papers', *Retraction Watch*, <https://retractionwatch.com/2019/01/14/an-australian-university-cleared-a-cancer-researcher-of-misconduct-hes-now-retracted-six-papers/>

¹⁶ UNSW Newsroom (2013) *UNSW response to ABC 730 story*, <https://newsroom.unsw.edu.au/news/general/unsw-response-abc-730-story>

¹⁷ UNSW (n.d.) *Professor Les Field*, <https://www.unsw.edu.au/staff/les-field>

¹⁸ (2013) 'UNSW responds to the ABC’s claim that its research into DZ13 was flawed', *Lab+Life Scientist*, <https://www.labonline.com.au/content/lab-business/news/unsw-responds-to-the-abc-s-claim-that-its-research-into-dz13-was-flawed-146558475>

¹⁹ Personal communication with Professor David Vaux, 7 July 2023.

Research misconduct in high-profile immunology studies

In 2020, the QIMR Berghofer Medical Research Institute in Queensland stood down one of its most prominent professors, Professor Mark Smyth, after six QIMR Berghofer staff members filed complaints with the institute.^{20,21} Professor Smyth served as the head of the Immunology in Cancer and Infection Laboratory at the institute. He was a Fellow of the Australian Academy of Science (AAS) who had received government grants totalling over \$38.2 million and was hailed as the “most highly cited immunologist in Australia” by the AAS.²⁰ The staff who reported Professor Smyth believed he could not have produced the amount of data presented in his papers in the time he spent in the laboratory, and accused him of fabricating data.²¹ In response to the allegations, QIMR Berghofer referred the case to Queensland’s Crime and Corruption Commission (CCC) in 2021. The investigation remains ongoing.²¹ A separate independent inquiry panel commissioned by QIMR Berghofer made findings that he had “seriously breached codes relating to responsible research conduct and the use of animals in research” and “fabrication of research data that was used to support grant funding applications and clinical trials.”²² The institute also appointed an independent review led by former Federal Court judge Bruce Lander (the Lander review) to understand the institutional circumstances that allowed research misconduct of this extent to occur.

Excerpts from this review were released to journalists, but not until a year after it was scheduled to report. This lack of transparency is another reason for concern about how such cases are investigated and reported on in Australia. Even so, the excerpts outlined how Professor Smyth had “thrived at QIMR Berghofer because its management structure was unwieldy, the human resources section was dysfunctional, and there was no research integrity office until 2018.”²¹ The review excerpts describe him as a “bully who used his reputation, status and power to intimidate”, and highlight that, at the time the whistleblowers reported their concerns to QIMR, some “had not been afforded the appropriate care, respect, or credibility.”²³ The review also found that “no one in authority knew that Professor Smyth engaged in research misconduct”, and attributed this to his personal relationships with other staff and the institute’s failure to perform a character check during the hiring process despite existing concerns about his methods.

²⁰ Miles (2021) 'Leading Queensland cancer researcher Mark Smyth faces allegations of misconduct after 'a number of complaints'', *ABC News*, <https://www.abc.net.au/news/2021-11-24/qld-professor-mark-smyth-stood-down-qimr-investigation/100646988>

²¹ Parnell (2023) 'Top research institute had seven years to act on misconduct complaints', *Brisbane Times*, <https://www.brisbanetimes.com.au/national/queensland/top-research-institute-had-seven-years-to-act-on-misconduct-complaints-20230509-p5d6w5.html>

²² QIMR Berghofer Medical Research Institute (2022) *QIMR Berghofer takes action over former employee misconduct findings*, media release, <https://www.qimrberghofer.edu.au/media-releases/qimr-berghofer-takes-action-over-former-employee-misconduct-findings/>

²³ QIMR Berghofer Medical Research Institute (2023) *Media statement*, <https://www.qimrberghofer.edu.au/media-statement-2/>

An example that illustrates these concerns surrounds a 2004 *Nature Immunology* paper co-authored by Professor Smyth during his tenure as head of the Cancer Immunology program at the Peter MacCallum Cancer Centre, a leading integrated cancer research and treatment centre in Melbourne. The paper was retracted in 2006 as it contained multiple instances of the same image being reused to represent different experimental results (image duplication), and data that had been falsified to distort the statistical significance of the findings.²⁴

However, the Lander review highlighted that, since 2020, QIMR Berghofer had “acted expeditiously and laboriously” to address the whistleblowers’ concerns, and improve their governance structures, policies, and culture.²³ In response to the inquiry findings, QIMR Berghofer has relinquished \$3.4 million in grants back to funding bodies, with more expected to be repaid.²⁵ The institute has been praised by Professor Vaux, for “handling [the matter] rigorously and properly”, despite having no obligation to do so.²⁶

Fraud in building materials research

A former researcher in the School of Engineering at Swinburne University was involved in some of the most far-reaching breaches of research integrity standards in Australia’s history. After receiving a prestigious government grant of \$1 million and a commendation from his university, Dr Ali Nazari was exposed by an anonymous whistleblower known by the pseudonym Artemisia Stricta.²⁷ Claiming to be an expert in the field of building materials, Artemisia Stricta released a report detailing Dr Nazari’s alleged involvement in an “international research fraud ring” involving three other research groups. The whistleblower raised concerns about the validity of 287 papers collectively published by the researchers. Of these papers, 166 were subsequently retracted.²⁸

Dr Nazari was listed as an author on a total of 208 of the affected papers identified by the whistleblower. These papers contained falsified results (71 instances), duplications and

²⁴ Hayakawa and others (2006) 'Retraction Note to: Antigen-induced tolerance by intrathymic modulation of self-recognizing inhibitory receptors', *Nature Immunology*, <https://doi.org/10.1038/ni0806-890>

²⁵ Parnell (2022) 'Research scandal costs Queensland institute millions of dollars', *Brisbane Times*, <https://www.brisbanetimes.com.au/politics/queensland/research-scandal-costs-queensland-institute-millions-of-dollars-20220421-p5af9v.html>

²⁶ Mannix (2021) 'Top scientist referred to corruption watchdog over alleged research misconduct', *Sydney Morning Herald*, <https://www.smh.com.au/national/top-scientist-referred-to-corruption-watchdog-over-alleged-research-misconduct-20211123-p59bar.html>

²⁷ Worthington (2019) 'Swinburne University researcher has 30 papers retracted, loses job', *ABC News*, <https://www.abc.net.au/news/2019-10-26/swinburne-university-researcher-has-30-papers-retracted/11641136>

²⁸ Artemisia Stricta (2020) *The Iran connection: Red flags in hundreds of publications by four research groups in the field of construction materials*, <https://drive.google.com/file/d/1JxEchNhBb770sQyQur-RsOXdrz9M1iyK/view>

plagiarism of work by other researchers (71 instances), and duplication of his own work or 'text recycling' (208 instances). On one occasion, a journal published four almost identical copies of the same paper in a single issue. The whistleblower also revealed that Dr Nazari created a group of five fictitious collaborators who were involved in co-authoring, reviewing, and citing his work (85 instances). A number of these papers examined the strength and resistance of building materials, a research area that affects building codes and industry best practice.

The allegations against Dr Nazari have resulted in a total of 96 retractions, making him the fifth most retracted author in the world.²⁹ Dr Nazari left the university following the scandal in 2019, and his whereabouts are currently unknown.³⁰

Image manipulations in Motor Neurone Disease research

In 2021, the *Sydney Morning Herald* reported allegations that researchers at the Centre for Motor Neurone Disease (MND) Research at Macquarie University had doctored images in multiple publications.³¹ Scientific integrity consultant Dr Elisabeth Bik first raised the allegations on the online database and post-publication peer review platform, PubPeer. Dr Bik identified seven papers co-authored by neuroscientist Professor Giles Guillemin,³² in which, she claimed, that images were reused multiple times to indicate different results (image duplications).

Professor Guillemin stated that he did not contribute to the papers beyond providing advice on the manuscripts and the design of the experiments on which they were based.³¹ Other anonymous PubPeer users also raised concerns about image manipulations or duplications in a further 17 papers co-authored by Professor Guillemin.³² Eight of these articles were published in a journal for which Professor Guillemin was associate editor.^{31,32} He maintains that none of the images were doctored by him personally, and that responsibility for the image manipulations apparent in the papers lies with foreign collaborators, former students and young scientists he met at a conference.^{31,33}

²⁹ Retraction Watch (2015) *The Retraction Watch leaderboard*, <https://retractionwatch.com/the-retraction-watch-leaderboard/>

³⁰ Worthington (2022) 'Death threats, ghost researchers and sock puppets: Inside the weird, wild world of dodgy academic research', *ABC News*, <https://www.abc.net.au/news/2022-01-31/on-the-trail-of-dodgy-academic-research/100788052>

³¹ Alexander (2021) 'Macquarie University considers investigating suspected research fraud', *Sydney Morning Herald*, <https://www.smh.com.au/national/macquarie-university-considers-investigating-suspected-research-fraud-20211214-p59hfr.html>

³² PubPeer (2023) *Search publications and join the conversation*, <https://pubpeer.com/search?q=Gilles+J.+Guillemin>

³³ <https://twitter.com/Thatsregrettab1/status/1435328250440421376/photo/2>

In January 2023, the Director of Research Ethics and Integrity at Macquarie University responded to an inquiry from Professor Vaux regarding the papers co-authored by Professor Guillemin.³⁴ Professor Vaux was informed that the “Preliminary Assessment had found ten of Guillemin’s papers had a potential breach of the university’s research code, and that four of them required further investigation.” In an email to *Retraction Watch*, Macquarie University confirmed that the concerns about Professor Guillemin were “being managed in accordance with the university’s Research Code Procedure” and that he had ceased employment.

When contacted about this incident, a spokesperson for Macquarie University said:

“Macquarie University completed a comprehensive Preliminary Assessment of allegations falling within the scope of the University, in accordance with its publicly available Research Code and accompanying Research Code Procedure. Corrective actions were identified in respect of some of the allegations considered in that Preliminary Assessment, but other allegations were dismissed. Corrective actions include author or institutional requests to journals for corrigenda or retractions, and institutional referrals for investigation. The referrals included any pertinent information identified during the Preliminary Assessment, with a recommendation for investigation if appropriate.”

That this internal investigation resulted in ‘corrective action’ shows the need for allegations to be investigated, even if they do not result in findings of research misconduct. As Part 2 of this report shows, education and professional development are essential parts of any good watchdog. But a coordinated, transparent, national approach is needed to ensure public trust in scientific research.

³⁴ Youmshajekian (2023) 'Exclusive: Researcher has “ceased employment” at university amid investigation and retraction', *Retraction Watch*, <https://retractionwatch.com/2023/06/27/exclusive-researcher-has-ceased-employment-at-university-amid-investigation-and-retraction/>

Motivation and incentives

There are many reasons that researchers may engage in research misconduct, but generally they converge on the highly competitive ‘publish or perish’ culture that is rife within academia. Getting papers published in prestigious journals or achieving a high publication rate are metrics by which a researcher’s career success and progression are measured, and on which their promotions are based. These achievements carry significant weight in the deliberations of grant-award agencies. The fierce competition for funding incentivises a rapid turnover of high impact publications to secure future employment and career success.

This commodification of authorship could tempt some researchers to compromise on research integrity standards and cut corners to gain a competitive edge. In a seminal paper titled ‘Why most published research findings are false’, a correlation was identified between flawed research and the competitiveness of a research field.³⁵ This suggests competition plays a significant role in contributing to questionable research practices. Some researchers may also be motivated by the desire for fame or prestige, leading them to engage in research misconduct to bolster their profile.³⁶

Academics are acutely aware of these issues and are not short on ideas for how the ‘publish or perish’ cycle might be broken. Some have suggested giving researchers lifetime word limits for publications,³⁷ introducing a limit on the number of papers that can be listed on grant applications per year, and mandating that CVs include a list of the applicant’s retractions along with an explanation.³⁸ But, most crucially, Australia needs to establish an independent research integrity watchdog.³⁹

³⁵ Ioannidis (2005) Why most published research findings are false, *PLoS Medicine*, <https://doi.org/10.1371/journal.pmed.0020124>

³⁶ Israel (2014) ‘Fabricating and plagiarising: when researchers lie’, *The Conversation*, <http://theconversation.com/fabricating-and-plagiarising-when-researchers-lie-33732>

³⁷ Martinson (2017) ‘Give researchers a lifetime word limit’, *Nature*, <https://doi.org/10.1038/550303a>

³⁸ Finkel (2018) ‘Science isn’t broken, but we can do better: here’s how’, *The Conversation*, <http://theconversation.com/science-isnt-broken-but-we-can-do-better-heres-how-95139>

³⁹ Vaux (2022) ‘Australia needs an Office for Research Integrity to catch up with the rest of the world’, *The Conversation*, <http://theconversation.com/australia-needs-an-office-for-research-integrity-to-catch-up-with-the-rest-of-the-world-176019>

Conclusion

A single research scandal has the potential to undermine the efforts of the thousands of honest researchers who have built Australia's reputable research record. The well-documented cases discussed above have been used to highlight the repercussions stemming from inadequate regulation in the research sector. However, the goal is not to personally target individuals, but to highlight the systemic issues inherent within Australia's research sector, which is worth \$1.8 billion annually. This is why Australia needs an impartial and government-funded research integrity watchdog that operates independently, maintains transparency, and possesses the authority to actively participate in investigations. Australia has witnessed the failure of self-regulation in the childcare sector, the finance sector and the energy sector. There is no reason that the research sector should be an exception.

Australia's current approach to dealing with research misconduct falls well short of global standards. The current self-regulation model relies on internal investigations and reporting by research institutes that are incentivised to protect their researchers and their own reputations. As a result, cases of research misconduct or fraud may go unnoticed or unreported. Research misconduct not only hinders scientific progress, but it also undermines the public interest. Adequate oversight is needed to tackle the ongoing issues in the research sector.

The 'publish or perish' culture provides a perverse incentive for dishonest researchers to bolster their profiles, and it could be leading researchers to resort to deception to get ahead. Moreover, poor research practices can give rise to dangerous conspiracy theories and adversely affect the health and wellbeing of people outside of the academic bubble. In this time of increasing scepticism and uncertainty research integrity is particularly important.

Science is a human endeavour and subject to the limitations of human nature. Australian researchers are no more or less honest than their international counterparts, and the majority act with integrity, honesty and rigour. But other nations have research integrity watchdogs to discipline bad actors, Australia does not.

The proposed regulatory body being developed by the Australian Academy of Science, Research Integrity Australia (RIA), is a step in the right direction, but it will need to be given sufficient powers and resources to effectively tackle research misconduct and meet global standards. While information about its framework is scarce, initial indications suggest that RIA might not function as a freestanding investigatory body. Under current plans, RIA would work with research institutions to establish a 'complaint triage' process that would assess the need for investigations. Any investigations that did take place would be conducted

internally, with the RIA providing external 'quality assurance'. Although the final shape of RIA is unknown, any proposed research integrity body must be enabled to prevent research misconduct.

Australia needs an independent research integrity watchdog with teeth to provide desperately needed oversight to the sector, prevent the decline of public trust in research, and foster confidence and international trust in Australian research. Ideas for how to create an independent national regulator that is robust, transparent and accountable are offered in Part 2 of this series, *Recommendations for creating a world-leading research integrity watchdog*.⁴⁰

⁴⁰ Scicluna (2023) *Research misconduct in Australia Part 2: Recommendations for creating a world-leading research integrity watchdog*