

# IMPERIAL COLLEGE LONDON

## RESEARCH INTEGRITY ANNUAL REPORT 2018-19

A Paper by the College Secretary

### INTRODUCTION

1. As a signatory to the UK Concordat to Support Research Integrity, the College is committed to “*maintaining the highest standards of rigour and integrity in all aspects of research*”, and “*ensuring that research is conducted according to appropriate ethical, legal and professional frameworks, obligations and standards*”. Accordingly, the College not only provides support and guidance for researchers so that research is conducted according to appropriate ethical, legal and professional frameworks, obligations and standards, it also has robust processes in place to deal with allegations of research misconduct when they arise.

2. The current Concordat also includes the following commitments and recommendations for research organisations, with which the College also complies:

*“employers of researchers should present a short annual statement to their own governing body that [...] provides a high-level statement on any formal investigations of research misconduct that have been undertaken ... To improve accountability, and provide assurances that measures being taken continue to support consistently high standards of research integrity, this statement should be made publicly available”*

*“employers of researchers should identify a senior member of staff to oversee research integrity and to act as first point of contact for anyone wanting more information on matters of research integrity.”*

*“employers of researchers should provide a named point of contact or recognise an appropriate third party to act as confidential liaison for whistleblowers or any other person wishing to raise concerns about the integrity of research being conducted under their auspices.”*

3. The College confirms on its [Research Integrity](#) webpages that the senior member of staff with leadership oversight for research integrity at the College is the Vice-Provost (Research and Enterprise), Professor Nick Jennings; and that the named point of contact for any person wishing to raise concerns about the integrity of research conducted at Imperial College is the College Secretary, John Neilson, who is both the Chair of the College’s

Research Misconduct Response Group (RMRG), and the designated person to receive Public Interest Disclosures under the College's whistleblowing procedures.

4. In accordance with its obligations under the Concordat, the College also considers an annual report on research integrity and misconduct. This is the sixth such annual report from the RMRG about the College's support for research integrity. As well as providing the Provost's Board with a detailed update on the actions taken to support research integrity, and to investigate concerns about research in the last year, this report forms the basis of the annual high-level statement on research integrity made to the Council in accordance with the College's commitments under the Concordat. A copy of the annual report to the Council will also be published on the College's Research Integrity webpages.

## **RESEARCH INTEGRITY**

5. The College's reputation and success in research are underpinned both by the quality and expertise of the individuals within the College, and by the standards of research governance and integrity that the College expects all researchers to meet. To this end, the College has adopted the Council for Science and Technology's Universal Ethical Code for Scientists and upholds its three principles, which are:

- Rigour, Honesty and Integrity
- Respect for Life, the Law and the Public Good
- Responsible Communications: Listening and Informing

6. The Vice-Provost (Research and Enterprise), Nick Jennings, has leadership oversight for the research environment, including Ethics and Integrity. The Research Office's responsibilities now also encompass an Ethics and Integrity function that will be reviewing gaps in the College's provision in this area. Additional information and guidance on the following areas of research integrity is also made available on the College website:

- Ethics
- Health and Safety
- Research Misconduct
- Equipment sharing
- Animal research
- Authorship
- Open Access
- Data Collection and Retention
- Public Interest Disclosures
- Peer Review
- Conflicts of Interest

- Intellectual Property
- Our Responsibilities

## **RESEARCH INTEGRITY TRAINING**

7. To support research integrity, the College already provides a variety of training opportunities and guidance to its researchers, including e-learning and face-to-face covering a variety of areas of research integrity, including health and safety, academic supervision, intellectual property, the responsible conduct of animal research, data protection, plagiarism awareness etc. In addition to these College's online resources and training opportunities, new fellows and clinicians are now provided with a half-day induction programme that aims to equip the new starters with a wide range of information and tools to help them start their careers at Imperial College. The induction programme includes a specific introduction to research integrity at the College.

8. The newly revised Concordat to Support Research Integrity, which was published on 25 October 2019 includes an expectation that employers will promote training and development opportunities to research staff and students, and encourage their uptake. In addition, funders are increasingly seeking assurances that institutions are providing training for researchers which can be documented as part of each individual's training record. To meet these new requirements, the College's Research Office is currently working with the College's Learning Development Centre to develop new online training modules on research ethics and research integrity that can be offered to all researchers in addition to the current suite of programmes, and which will be eventually be made mandatory for all new and early career researchers at the College.

9. As well as providing training and support for early research staff at the College, advice and guidance on research integrity is also provided for postgraduate students by the College's Graduate School. Its online plagiarism course, which is intended to equip Imperial PhD students with a working knowledge of the concept of plagiarism and how to avoid it, is compulsory for all 1st year Doctoral students and must be completed before the 9-month Early Stage Assessment. A similar mandatory course is also provided for Masters level students.

10. The Graduate School has also developed a Supervisors' Guide, which is available online, and as a printable handbook. The guide sets out the College's requirements for the continuing professional development of supervisors, and contains information about the recruitment of research degree students, the roles and responsibilities of supervisors and Imperial's research degree milestones. The guide is also intended to support the effective development of student supervisor partnerships, a key part of the effective development of future researchers.

11. Although undergraduate and Master level projects are routinely checked for plagiarism using tools such as Turnitin, the same process did not previously apply to PhD projects. Following a decision by the Provost's Board that PhD theses should also be routinely checked for plagiarism as part of the submission process, the RMRG established a working group with representation from each of the Faculties, which was charged with developing a plan for implementing this requirement for PhD students. The Working Group completed its work during the year, and in June 2019 the procedures for the use of Turnitin for ESAs for all new students starting in 2019/20, and for all PhD theses from 2021-22 were approved. In line with this new requirement the Registry, Library and the College's E-Learning team have prepared new webpages which provide guidance on the new requirements and procedures for students and staff, including the following:

- Background and general information on the use of Turnitin for PhD Milestones.
- Step-by-step guidance for departmental staff on setting up ESA assignment submission area on the website
- A PowerPoint presentation on how to interpret Turnitin originality.
- Dates for two information sessions for staff (Directors of PG studies and PGR Admin).

## **RESEARCH MISCONDUCT**

12. Allegations of research misconduct are considered under Ordinance D17, *the Investigation of Allegations of Research Misconduct*, which align closely with the requirements of the Concordat and with the UK Research Integrity Office's model procedures for the investigation of misconduct in research.

13. Under these procedures, allegations of research misconduct are made in confidence to the College Secretary, as Chair of the RMRG. The other members of the RMRG are the Vice-Provost (Research and Enterprise), the Director of the Research Office and the Director of HR. If the RMRG agree that an allegation constitutes research misconduct, it will arrange for a screening investigation to be conducted. The purpose of the screening investigation is to determine if there is a *prima facie* case of research misconduct. There are normally three possible outcomes from a screening investigation:

- a. That a *prima facie* case has not been established, in which case the case will normally be dismissed.

b. If the screening investigation determines that there is some substance to the allegations, but it is judged that they are minor or there is lack of intention to deceive then the allegation may be dealt with through informal resolution.

c. That there is a *prima facie* case for further investigation. In such cases, the Provost will convene an investigation panel, which must include an independent, external member, to conduct a formal investigation and reach a conclusion on whether the allegations are founded, based on the balance of probabilities. Where an allegation is upheld, it will then be referred to a disciplinary panel, which will determine the appropriate penalty to apply.

14. The Chair of the RMRG, the Director of the Research Office and the Head of Central Secretariat meet on a weekly basis to monitor progress with all research misconduct investigations. In 2018-19 the College received six allegations of research misconduct, which is broadly in line with the number of complaints received in previous years. In accordance with the Concordat the outcome of all cases that are referred for full investigation are reported to the Council. One case was referred for full investigation, although the formal investigation has not yet been concluded. Further information on research misconduct cases in 2018-19 is attached at Annex A.

15. An increasing number of allegations are being made anonymously, either by individuals who do not wish to be identified, or under the pseudonym '*Clare Francis*'.<sup>(1)</sup> Many of these emails from '*Clare Francis*' do not contain particularised allegations, but rather refer back to anonymous comments made on the PubPeer website. PubPeer allows comments to be made anonymously, and goes to considerable lengths to safeguard the anonymity of its contributors. Although it claims not to allow defamatory comments, critical comments about papers often imply that data has been manipulated and/or falsified. Although PubPeer forwards these comments to academics and invites them to respond to them via its website, it does not normally make formal allegations of misconduct to institutions as a result of comments made by its contributors. While sites such as this can identify problems with particular papers, too often negative and abusive comments (which are invariably anonymous) can descend into a form of cyber-bullying. The RMRG has to exercise particular care when dealing with anonymous allegations, as it also has a duty to protect researchers at the College from ill-founded, frivolous, mischievous or malicious complaints. One of the cases investigated in 2018-19 involved allegations made by '*Clare Francis*' and others.

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1. '*Clare Francis*' is the pseudonym used by a person (or group of people) since 2010 to call attention to suspected cases of plagiarism and fabricated or duplicated figures in research publications. Although some of the complaints have resulted in retractions, there have also been concerns from journals and universities that 'her' claims are often unparticularised, difficult to verify and can often be a waste of time to investigate.

## **TYPES OF OFFENCES**

### **Plagiarism**

16. A common feature of several allegations since 2012, including one in 2018-19, is the inclusion of plagiarised material in manuscripts presented for publication. In a number of these cases, this was not the result of an intention to deceive or to claim credit for another person's work, but rather a result of poor working practices. For example, in some cases the plagiarism appears to have been the result of poor referencing practices, and/or a failure to acknowledge properly the contribution made by previous researchers in the subject field.

### **Data Duplication and Manipulation**

17. A growing number of allegations concern the manipulation or duplication of data in research papers and proposals, including two of the six allegations made this year. These allegations usually centre on the use of western blots. Western blots are a valuable technique for researchers trying to demonstrate a particular effect. However, they can also be used by researchers who might be tempted to manipulate the resulting images in order to make their results look better than they really are, and there are numerous examples of papers having to be retracted or withdrawn as a result of suspect western blot illustrations.<sup>(2)</sup> The allegations submitted by 'Clare Francis' and some others this year were concerned with potential data manipulation and duplication.

### **Authorship**

23. Disputes over the inclusion or exclusion of researchers as listed co-authors on papers continue to result in a significant number of allegations each year. Indeed, in the period since 2012, authorship disputes have been the cause of 31% of all research misconduct allegations made to the RMRG. While it is true that there are differences in authorship conventions between different subject areas, it is clear from these complaints that not all researchers understand these conventions, or how they might apply to their own published research. In order to avoid authorship disputes, departments and principal investigators are encouraged to confirm at the outset that only those researchers who have made a significant intellectual or practical contribution to the work should be listed as a co-author, and that all authors should abide by the College's authorship guidelines.

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2. For example, the Japanese cancer researcher Naoki Mori had more than 30 papers retracted after image manipulation in each of them was uncovered. He received a 10-year publishing ban from the American Society of Microbiology (ASM).

## **RESEARCH MISCONDUCT ALLEGATIONS FOUND TO BE PROVEN**

24. In 2017 a former PhD student at the College admitted falsifying data during his period as a post-doc at the University of Lausanne. This led to the retraction of a paper produced while he was at Lausanne and published in the Journal of Cell Biology. Following the publication of this retraction, and the admission that he had fabricated data, a paper published while he was a PhD student at Imperial College was scrutinised to see if the data reported in that paper was similarly compromised. This scrutiny uncovered further fabrication of gel blots, and in correspondence with the former student, he admitted fabricating the two western blots in the paper for which he was responsible. That paper was also retracted as a result of his admission.

25. As the fabricated figures and the data in the retracted paper were also used in his PhD thesis, the College referred the case to a Review Panel to consider whether his PhD should be now revoked as a result of the fabricated data. Before making a recommendation, the views of the original external examiners for the PhD were sought. They confirmed that the fabricated images raised strong concerns about the validity of the study presented for the PhD. On the basis of the external examiners' comments and the student's previous admission of misconduct, the College panel agreed that his PhD Award should be revoked. As the PhD was awarded formally by the University of London, the College is liaising with the University to arrange for the revocation of the PhD award.

## **RESEARCH MISCONDUCT INVESTIGATIONS AND THE SUPPORT PROVIDED FOR THOSE INVOLVED IN INVESTIGATIONS**

24. The conduct of research misconduct investigations is challenging; the investigation must be rigorous, but also fair to both the complainant and respondent. The College recognises that investigations of potential research misconduct are stressful for all who are involved in them, either as accuser or accused. Allegations of research misconduct are taken seriously, and if proved, can have serious consequences for an individual's career. Even if a complaint is rejected and an individual exonerated, the investigation process itself can interrupt research and cause significant stress. For these reasons, the proceedings of any investigation into cases of potential research misconduct are, as far as possible, treated as confidential. In addition, the College provides pastoral support for all those involved throughout the process. Where an individual who has been accused of research misconduct is exonerated after investigation, the College will also take reasonable steps to help the research maintain their reputation and assist them in resuming any research temporarily put on hold.

25. When an individual is accused of having committed research misconduct, they are provided with a full copy of the allegations made against them, as well as a copy of the research misconduct procedures. At the same time they are informed of the support mechanisms available to them, which include:

- Referral to someone in HR who is not involved in the case, but is familiar with the processes, and who can provide them with impartial advice on how the investigation will proceed.
- An offer from the Faculty to appoint a senior member of staff from their Faculty who is not involved in the case as an advisor and supporter to provide them with support and assistance throughout the investigation process
- A reminder that they have the right to be accompanied at any meeting during the investigation by a friend or a trade union representative, and that they can also ask their trade union for additional assistance and support
- A reminder that they can use the College's Confidential Care counselling service.

26. Similar support mechanisms are also available for staff and/or students who bring forward complaints of potential research misconduct and can also be provided for witnesses interviewed as part of any investigation if they are concerned about their involvement in the process. At any point in an investigation, staff who are finding the process stressful can also be referred to occupational health.

27. As the investigation process is, as far as possible, treated as confidential in order to protect all of those involved in the process, information about individual cases is generally restricted to those directly involved in the case. However, the relevant Dean, Faculty Operating Officer and Head of Department are all informed about the allegations in confidence at the beginning of each investigation, and are provided with regular updates throughout the investigation process.

28. In 2018-19 the RMRG reviewed the support mechanisms available to staff involved in research misconduct investigations. Although it was satisfied with the level of support provided, it noted that, while the College's webpages include a summary of the research misconduct procedures, they do not include advice on the additional support available to staff involved in the process. It has therefore been agreed that these pages will be updated to include advice on the support available to staff, as set out above, and will include a more explicit statement that the College recognises that any investigation of this type will be stressful for all involved, that the College will provide pastoral support for all those involved and that, if a person is found to have no case to answer, the College will provide take reasonable steps to help them maintain their reputation and assist them in resuming any research temporarily put on hold. In addition, the College will prepare detailed guidance



notes for those involved in research misconduct investigations, and make these available on the web. These guidance notes will set out the support available for the accused (as noted above), make it clear that HR officers are involved in and support the investigation process, and will confirm how the investigation process will be handled.

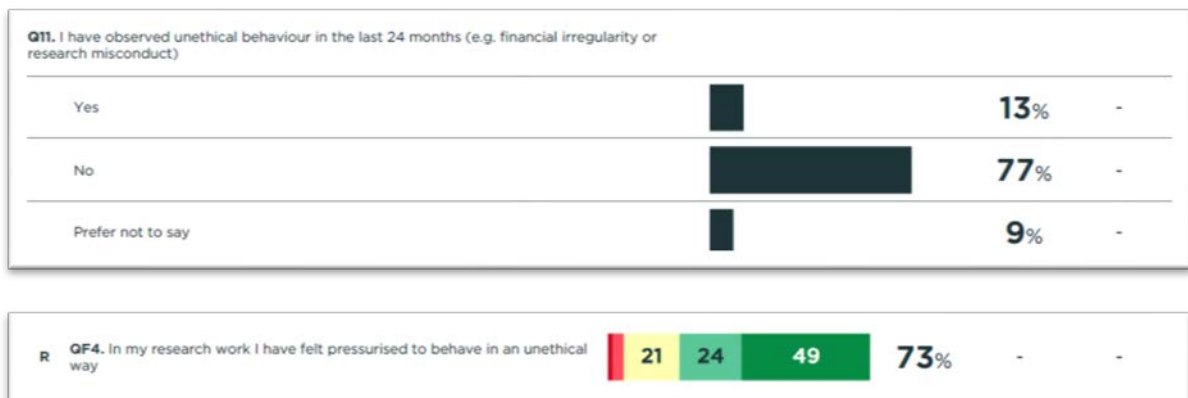
**FREQUENCY OF RESEARCH MISCONDUCT**

29. In an effort to understand better the frequency of research misconduct across the College, two new questions on misconduct were included in the College’s 2019 all staff survey for the first time. The questions were:

*“I have observed unethical behaviour in the last 24 months (eg financial irregularity or research misconduct); yes, no or prefer not to say”*

*“In my research work I have felt pressurised to behave in an unethical way”*

The College wide results for both questions were recorded as follows:



30. In his 2009 study *“How Many Scientists Fabricate and Falsify Research? A Systematic Review and Meta-Analysis of Survey Data”* PLOS ONE 4(5), e5738, Daniele Fanelli conducted a review of 33 surveys of research misconduct to determine the frequency with which scientists fabricate and falsify data, or commit other forms of scientific misconduct. This study showed that 2% of the surveyed scientists had admitted having fabricated, falsified, or modified data at least once, while 14% said that they knew of colleagues doing so. It also showed that as many as 72% of the surveyed scientists thought that colleagues had committed ‘questionable research practices’ (e.g. intentional non-publication of results, biased methodology and misleading reporting). In this context, the number of College staff who state they have observed unethical behaviour by colleagues would seem broadly in line with the general experience of such behaviour in the wider scientific community (13%

against 14% in the PLOS ONE study), although it must be recognised that this would include suspected financial or recruitment irregularities as well as research misconduct. Nevertheless, it is still a matter of concern for the College that 13% of its staff believe that they have observed others engaged in unethical behaviour, and that only 73% of staff felt able to state that they had not felt pressurised to behave in an unethical manner. The RMRG will consider how to address these concerns in the coming year.

### **WIDER SECTORAL CONCERNS**

31. As noted above, the Concordat to support research integrity, to which the College is a signatory, was first established in 2012. This set out a coordinated national policy statement on what different stakeholders need to do to help promote good research practice, and the responsibilities of each party when it comes to dealing with allegations of misconduct. In the period since then, there has been increasing national scrutiny on the extent to which universities and other research organisations are: a) complying with the Concordat; and b) actively investigating instances of research misconduct.

32. In July 2018, the House of Commons Science and Technology Committee published the report of its inquiry into research integrity and the effectiveness of controls/regulation (formal and informal) in this area. Although it recognised that the vast majority of research undertaken in the UK is of high quality and high integrity, the Committee expressed its concern about a lack of transparency and identified a significant degree of non-compliance with the Concordat, with 25% of UK universities failing even to produce an annual report on research integrity, and many of the others reporting no investigations of misconduct in each year. The Committee recommended a number of measures to strengthen the Concordat along with a timetabled route-map to securing 100% compliance with its terms. It also recommended that consideration be given to the establishment of national committee that could *“provide a means of independently verifying whether a research institution has followed appropriate processes in investigating misconduct”*, following similar models in Canada and Australia.

33. Following the publication of the Select Committee report, Universities UK and the other signatories of the Research Integrity Concordat considered how the Concordat could be clarified and updated to take account of the Committee’s recommendations. A revised draft was promulgated for consultation in February 2019. The revised concordat included a clearer statement of the expectations for institutions and researchers, as well as a requirement for increased monitoring of compliance with the concordat and its commitments and a suggestion that all researchers should be required to undertake mandatory training on research ethics and research integrity throughout their careers. In its response to the consultation, the College welcomed most of the revisions. However, while

it agreed that new and early career researchers should be provided with mandatory training in research ethics and integrity, it did not believe that this should be a mandatory requirement for experienced researchers. As is noted above, the College's Research Office has been working with the College's Learning Development Centre to develop new online training modules on research ethics and research integrity that can be offered to all researchers in accordance with the commitments that it expected would be included in the revised concordat.

34. The revised Concordat was published on 25 October 2019. Although the requirement for mandatory training does not feature in the new Concordat, there is a clear expectation that the provision of training, support and mentoring on research ethics and research integrity to support the development of researchers' skills throughout their careers is a minimum requirement for a research environment that helps to develop good research practice and embeds a culture of research integrity. The Vice-Provost's Advisory Group for Research and the RMRG will now consider the new requirements contained in the revised Concordat and will make recommendations to the Provost's Board on how they should be implemented at the College.

35. In response to the Select Committee's recommendation that consideration be given to the establishment of a national committee to review research misconduct investigations, in June 2019 the Minister of State for Universities, Science, Research and Innovation, Chris Skidmore MP, confirmed that the UKRI Board proposed to proceed with the establishment of a Research Integrity Committee under the auspices of UKRI. It was stated that, in line with the Canadian model mentioned by the Select Committee, the new UKRI Research Integrity Committee would:

*“champion best practice and produce an annual report on the health of the sector regarding research integrity. It will check that institutions have complied with terms and conditions of UKRI funding when investigating research misconduct, and provide oversight of UKRI research grant funding by reviewing investigations undertaken by individual research institutions and providing an annual assurance statement. It would apply sanctions if deemed necessary.”*

36. Although UKRI's remit does not extend explicitly to other research funders, the Minister's letter also confirmed that UKRI would expect to be informed of almost all instances of 'alleged research misconduct', whether funded by the research councils or not, on the basis that almost all research conducted by higher education institutions is underpinned by UKRI's QR funds. It is intended that the new Committee will commence operations in early summer 2020. This is clearly a significant change for the sector, as the expectation is that universities will, in future, have to report all research misconduct allegations, whether substantiated or not, to the new UKRI Committee. Previously

universities have only reported cases to funders where evidence of misconduct has been established.

37. In September 2018 the Royal Society and the UK Research Integrity Office published an Integrity in Practice Toolkit intended to provide support for improving the culture of research integrity in institutions. The toolkit featured a variety of ideas and best practice from across the UK and the rest of the world which been tested with a broad range of stakeholders for their usefulness and replicability in different contexts. Pleasingly, Imperial College was one of the institutions identified as an exemplar for the toolkit, with its annual report on research integrity being praised for the way it shared information and insights from the conduct of research misconduct investigations.



38. The RMRG will continue to engage with sectoral discussions and will monitor external developments in relation to research integrity and misconduct to ensure we continue to keep ahead in developing our research environment and culture in this important area.

John Neilson  
October 2019

Presented to the Council - November 2019.

## RESEARCH MISCONDUCT

The following charts show the number of allegations of research misconduct received since 2012, as well as the types of allegations made this year, and since 2012. An anonymised list of the allegations received in 2018-19 is also provided.

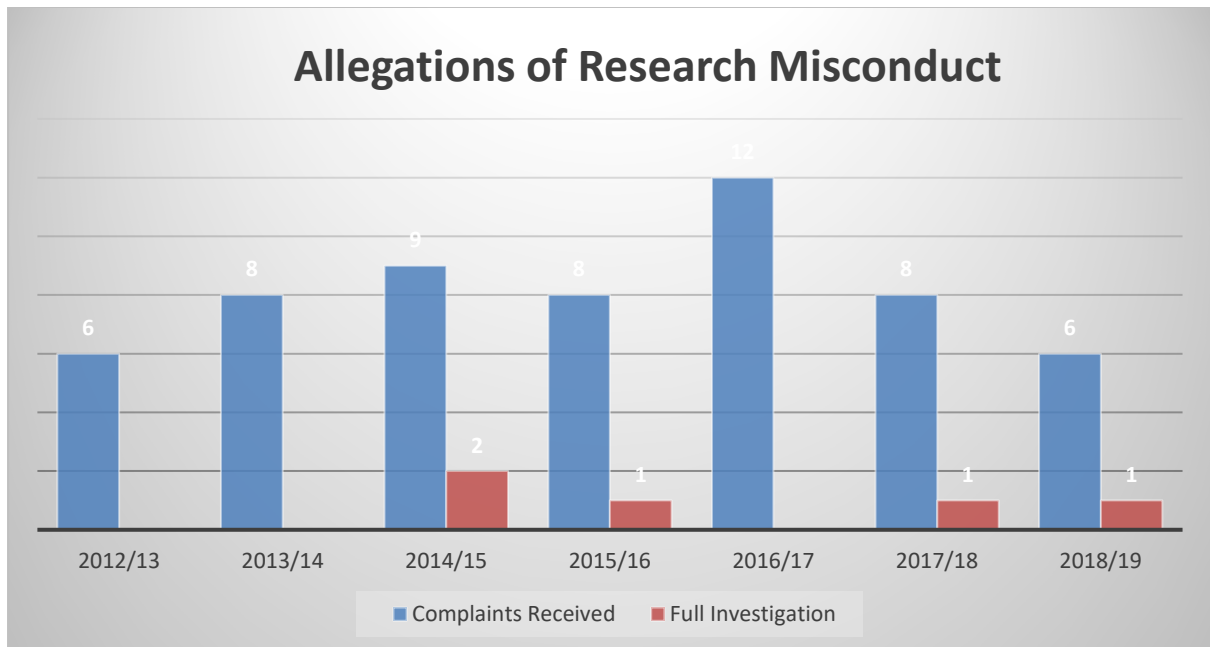
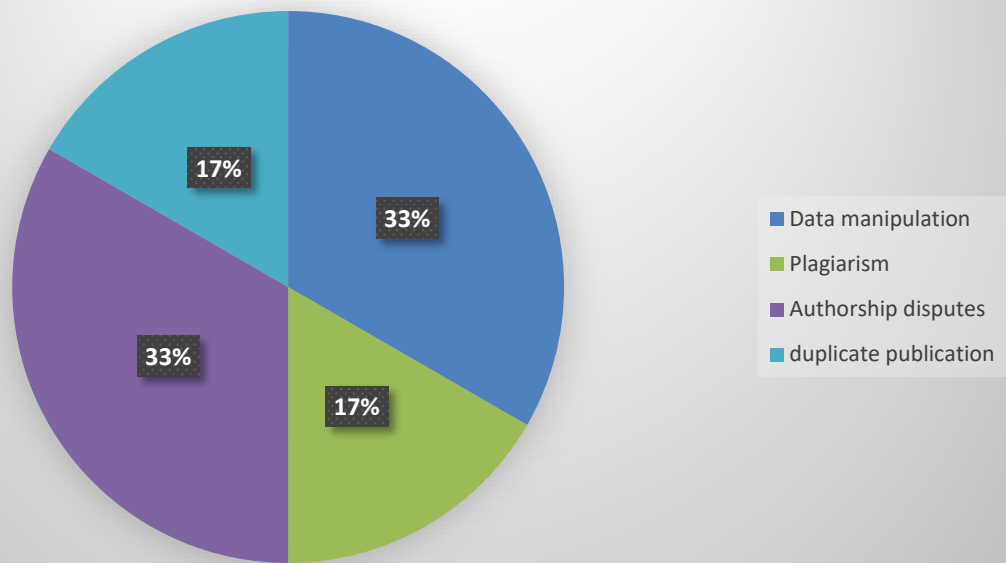


Figure 1. Allegations of research misconduct 2012 – 2019



## Research Misconduct allegations 2018-19



Figures 2 and 3. Nature of research misconduct allegations made since 2012 and in 2018-