RESEARCH INTEGRITY ANNUAL REPORT 2016-17

A Paper by the Provost

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 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.   The College also considers an annual report on research integrity and misconduct, and this report is intended to fulfil this particular requirement. The report provides information about the College's arrangements for supporting research integrity, as well details of the investigations of research misconduct that have been undertaken in the last academic year. A version of this report has already been considered by the Provost's Board, and a copy of it will also be published on the College's Research Integrity webpages, following its presentation to the Council.

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), 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. To support research integrity, the College provides training and guidance to its researchers. A summary of the training programmes available to researchers and postgraduate students at the College is attached at Annex A, and 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

7.	Advice and guidance on research integrity is provided for postgraduate students by the Graduate School. It has recently refreshed these 'ensuring integrity' training programmes, including its mandatory training on plagiarism awareness. The online plagiarism course was developed in conjunction with the Library, and is intended to equip Imperial PhD students with a working knowledge of the concept of plagiarism and how to avoid it. The Plagiarism Awareness course 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.

8.	The Graduate School has also developed a Supervisors' Guide, which is available online, and also 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.

9.	Last year's Research Misconduct report noted that, although undergraduate and Master level projects are routinely checked for plagiarism using tools such as Turnitin, the same process did not apply to PhD projects. As a result, the Provost's Board agreed that PhD theses should also be routinely checked for plagiarism as part of the submission process, although it was noted that appropriate arrangements for introducing this requirement, and for training, would have to be put in place. To this end, the RMRG is establishing a working group with representation from each of the Faculties to develop a plan for implementing the requirement for plagiarism checks through Turnitin for PhD students.

RESEARCH MISCONDUCT

10.	Allegations of research misconduct are considered under Ordinance D17, *the Investigation of Allegations of Research Misconduct*. A number of revisions to these procedures were agreed by the Provost's Board last year, and these now 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.

11.   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), 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.

12.   In 2016-17 the College received twelve allegations of research misconduct. Although this appears to be a significant increase on previous years, five of the allegations raised with the RMRG were rejected by the RMRG without the need for a further investigation. This was either because the concerns raised did not constitute research misconduct, or because the allegation was not one which could investigated by the College (for example, one allegation concerned papers produced by a researcher before he joined Imperial College). In some cases these allegations were referred for investigation under more appropriate procedures, such as the College's grievance or conflict of interest procedures.

13.   In accordance with the Concordat all cases that are referred for full investigation are reported to the Council. No cases were referred for full investigation in 2016-17. Further information on research misconduct cases in 2016-17 is attached at Annex B.

14.   An increasing number of allegations are being made anonymously, either by individuals who do not wish to be identified, or under the pseudonym *'Claire Francis'*. [1] For example, in December 2017 the College received more than 15 separate but related allegations from the 'Claire Francis' pseudonym in just one week.[2] Many of these emails from 'Claire Francis' did not contain particularised allegations, but simply referred 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.

TYPES OF OFFENCES

Plagiarism

15.   A common feature of several allegations since 2012, including two in 2016-17, 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. In some cases the researchers claimed that they had included copied material as 'placeholders' in the manuscript which they had intended to rewrite at a later date. In other cases the plagiarism appears to have been the result of poor referencing practices, and/or a failure to acknowledge the contribution made by previous researchers in the subject field.

16.   Although the College now provides considerable support and guidance on avoiding plagiarism for its students, at both undergraduate and postgraduate level, similar provision is not yet made for post-docs and younger, early career academics. The Provost's Board has

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1. *'Claire 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.

2. These allegations are currently being investigated, and will be reported on in more detail in next year's annual report.

previously agreed that plagiarism awareness training for early-career researchers should be developed, and that all who have not already done this training here as part of their doctoral studies should be required to complete plagiarism awareness training before they are allowed to prepare manuscripts for publication. It is possible that the existing plagiarism awareness courses provided by the Graduate School might also be appropriate for early career researchers.

Data Duplication and Manipulation

17.   A growing number of allegations concern the manipulation or duplication of data in research papers and proposals, including four of the twelve allegations made in 2016-17. These allegations usually centre on the use of western blots. Western blotting (sometimes called the protein immunoblot) is a widely used analytical technique used to detect specific proteins in a sample of tissue homogenate or extract. Western blots are a valuable technique for researchers trying to demonstrate a particular effect. However, they also seem to be a technique attractive to 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.[3] Most of the negative comments on PubPeer, and many of the allegations submitted by 'Claire Francis', concern western blot images that may have been duplicated or manipulated in some way. Examples of two recent image manipulation allegations are shown below.
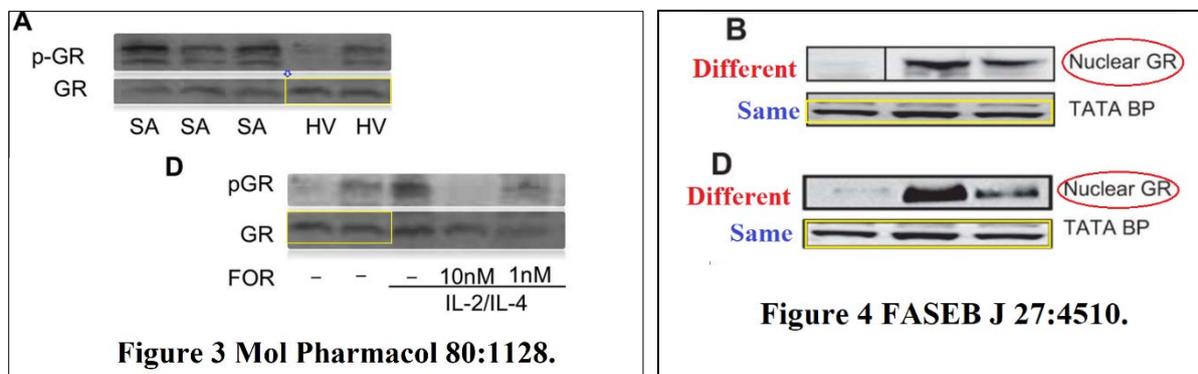
18.   The number of allegations concerning western blots now coming forward demonstrates the need for care in their use in research papers, and in particular that original digital or analogue data is kept exactly as it was acquired, and that instrument settings are properly recorded so that the original data can be inspected if any question about the data

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3. 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).

arises either during, or post, publication (indeed journal reviewers and editors are increasingly requesting access to such primary data to ensure accuracy).

Authorship

19.   Two of the allegations in 2016-17 concerned disputes over the inclusion or exclusion of researchers as listed co-authors on papers. While it is true that there are differences in authorship conventions between different subject areas, it is clear from these complaints that not all early career 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 it is the responsibility of the senior author on a paper to confirm the scientific accuracy of the entire publication, and to verify that each co-author has reviewed the manuscript and is able to confirm that their area of expertise is accurate to the best of their knowledge.

RESESARCH MISCONDUCT INVESTIGATIONS

20.   The conduct of research misconduct investigations is challenging; the investigation must be rigorous, but also fair to both the complainant and respondent. Investigations can also be extremely stressful for both the person accused of research misconduct, whose career and reputation will be on the line, and for the complainant. The College recognises this, and provides support for all of those involved in a research misconduct investigation. The Central Secretariat and HR have also developed a training programme for investigators to assist them in the conduct of research misconduct investigations. The training programme is intended to provide the College with a cadre of trained investigators who can carry out future investigations. A number of training sessions for staff in across the College have been since they were introduced in 2016. Further sessions will be provided in 2018, the aim being to train a number of academics across all of the College Faculties.

WIDER SECTORAL CONCERNS

21.   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.

22.   In 2016, Universities UK published a progress report on the Concordat, and called for institutions to take a more proactive and open approach to reporting data on allegations of misconduct as part of an annual statement that should be made public. In 2017 an investigation by the BBC identified from Freedom of Information requests that at least 300 allegations of research misconduct had been reported at 23 Russell Group universities between 2011 and 2016. The allegations included plagiarism, fabrication, piracy and misconduct, and about a third were upheld, with more than 30 research papers having to be retracted.

23.   The House of Commons Science and Technology Committee has also recently commenced an inquiry into the issue research misconduct (copies of the request for information from the Committee's Chair, Norman Lamb MP, and the College's response are attached at Annex C).

24.   The Research Councils have also been revising their policies on the receipt of reports on research misconduct. Typically universities have in the past informed the Research Councils and other funders of allegations of research misconduct only when a formal investigation is commenced (i.e. only after a prima facie case has been established as a result of a screening investigation). However, the Research Councils are now consulting on new guidelines that would require universities instead to report allegations at the screening stage rather than when a prima facie case has been established. This would represent a significant extension of universities' reporting responsibilities, and would also result in the Research Councils being informed of many more cases than at present, the majority of which will either be dismissed following screening, or which may result in an informal resolution. There are concerns that this could have an impact on an individual researcher's grant applications, if the Research Councils are made aware of allegations concerning them that are under investigation, but where no determination has yet been made on whether or not there is a prima facie case of misconduct.

25.   There have also recently been some calls for the establishment of an entirely independent UK regulatory body to oversee publicly funded research, based on models in the US and Denmark. Such a body would take on responsibility for all research misconduct investigations, which would then be out of the hands of individual universities. The House of Commons Science and Technology Committee has confirmed that it will explore whether some form of regulator is required as part of its investigation, although it has acknowledged that "*there is no appetite for that in the wider community at the moment*".

26.   The RMRG will continue to engage with these wider sectoral discussions and will monitor external developments in relation to research integrity and misconduct.

Research Integrity

Face to face training and e-learning programs offered by Imperial College London

Training available to Postgraduates:

- Plagiarism Awareness
- Intellectual Property
- Copyright for Researchers
- Introduction to making your Thesis Open Access
- Science, Research and Integrity
- Data management
- Research Data Management plans (Webinar)
- Writing for success

Training available to PostDocs and Fellows :

- Designing And Delivering Research Projects In Academia
- 3Rs & Responsible Animal Research
- Intellectual Property Rights (IPR) Can Impact your Research
- Effective Project Implementation
- How to Peer Review Research Papers
- Managing Your First Research Group
- Project Management: Core Skills
- Writing Tools for Research Publication Success
- Research Ethics - Making a Successful Application to the Committee
- Open Access and Open Data
- Navigating the Lifecycle of Collaborative Research Projects'
- Plagiarism Awareness (currently in development

Training available to Academics :

- Health and Safety Responsibilities for Academic Supervisors/Principal Investigators
- ICIS Training for Safety Training Data Reporting
- Intellectual Property Awareness
- Archives, Records & File Management
- Freedom of Information and Data Protection
- Records Management
- Project Management: Core Skills
- Introduction to Project Management for all Staff
- Briefing and Report Writing
- Academic Masterclass: Research Ethics - Making a Successful Application to the Committee
- Research Misconduct Investigations
- Freedom of Information and Data Protection – e-Learning course

Imperial Research Integrity

RESEARCH MISCONDUCT

The following charts show the number of allegations of research misconduct received since 2012, as well as the outcomes from investigations conducted in 2016-17.
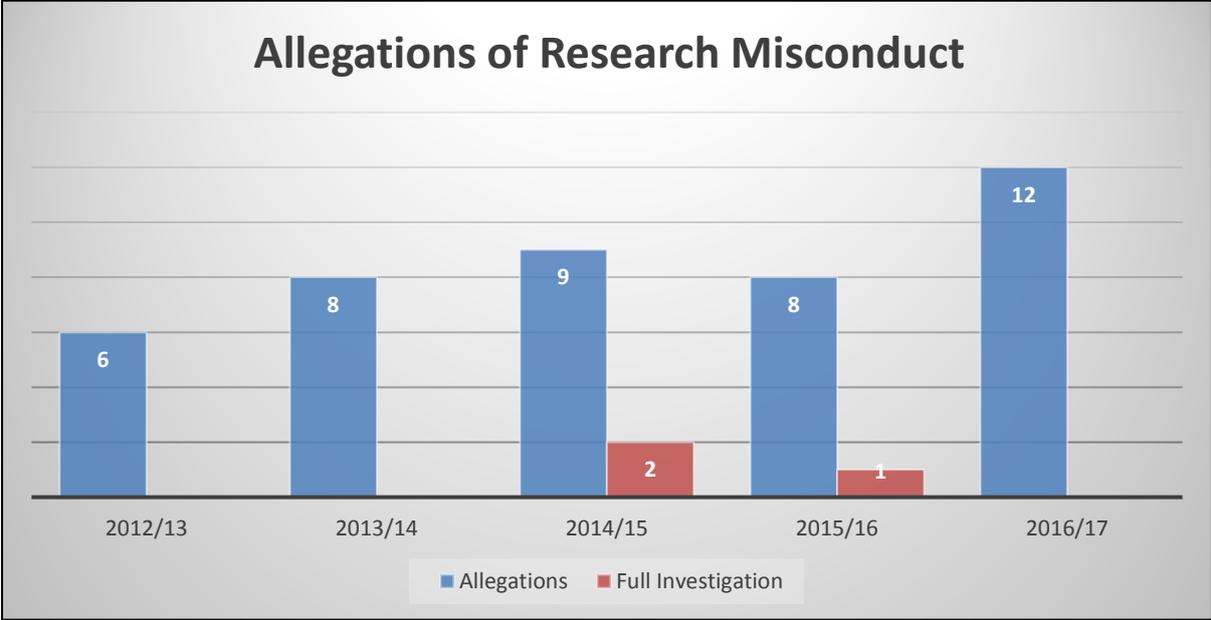

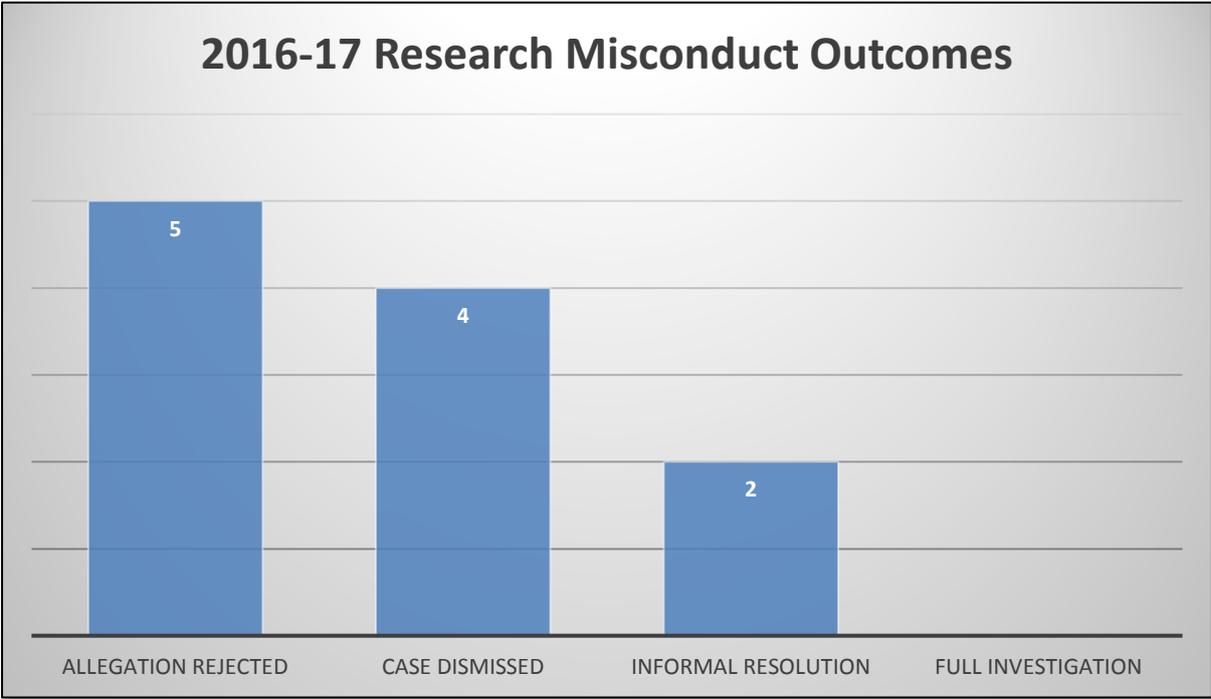Figure 1. Allegations of research misconduct 2012 – 2017

Figure 2. Outcome from research misconduct allegations 2016-17