FAIRS report
Quantitative and qualitative data: Round 2

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This is a report to provide feedback to participants in Round 2 of the FAIRS survey. For background to the survey, please see the protocol here: https://osf.io/rycqb/. N.B. At the request of one panel member, the numbering of free text comments in tables below has been randomised, so that a specific individual's responses cannot be tracked across items.

97 panelists signed up to take part in the survey, and completed surveys were received from 79 of them. An item was added at the end of the survey, as follows: "We anticipate that patterns of responses may be different for those who are primarily involved in raising concerns about serious research misconduct (e.g. sleuths, whistleblowers, victims of research fraud) and those whose job it is to respond to reports of such concerns (e.g. research integrity officers). Could you please specify here which of those groups you identify with most strongly - or whether neither applies to you." The distribution of respondents was as follows:

- Sleuths, Whistleblowers, etc (Group 1_S), N = 36

- Research Integrity Officers, etc (Group 2_R), N = 22

- Others (Group 3_O), N = 21.

Those responding Other were given the option to give more description of their background, and responded as follows:

Further details of those in 'other' group

Free text
2.0_O1) Editor and searcher
2.0_O2) Researcher
2.0_O3) Researcher and research team leader
2.0_O4) I am a senior researcher in research integrity and reproducibility.
2.0_O5) As a Journal reviewer and Editor I am closer to the Sleuth category. I have a strong professional motivation to keep our publication truthful!
2.0_O6) Researcher, but once I was a victim of research fraud

Free text
2.0_O7) Senior academic
2.0_O8) Primarily meta-scientist and tool-developer for sleuths, with first-hand sleuthing as a secondary interest
2.0_O9) Researcher in science of science.
2.0_O10) I am a researcher who also holds several editorial board positions on journals and frequently peer reviews articles, grant applications and trial reports. I wouldn't say I am a sleuth - this is just part of all of our practice to help identify this type of misconduct and prevent research entering the public domain as rubber stamped as 'peer reviewed' where there is a risk of misconduct
2.0_O11) Research Integrity Policy
2.0_O12) Researcher with specific interest in Research Integrity
2.0_O13) I have been interested in this topic for a while.
2.0_O14) Researcher on public policy and research integrity issues
2.0_O15) [redacted]
2.0_O16) I perform research on research integrity and teach about the topic in courses, lectures, masterclasses, workshops etc. Additionally I contribute to national and international policy committees and boards that focus on preventing, diagnosing and treating issues of research integrity.
2.0_O17) Editorial Role and Researcher
2.0_O18) have served on university misconduct panel but not in official role as an integrity officer
2.0_O19) Government statistics and data

The gender distribution was as follows:

Gender	N
Man	53
Woman	26

The bulk of respondents were from Europe or N America:

Continent	N
Africa	3
Asia	2
Australasia	3
Europe	55
N. America	14
S. America	2

For each item, responses are shown by subgroup, where 1 = S(leuths), 2 = R(esearch Integrity Officers) and 3 = O(ther). For simple multiple choice items, the table shows percentages in each group with a given response.
In addition, for items with several subitems, the percentage with agreement/strong agreement is shown for each subitem.

In Round 2, illustrative free text comments from Round 1 were selected to provide context for respondents. To see these and the full text of the Round 2 survey, please follow this link: https://osf.io/k9maf.

Additional free text comments by panel members from Round 2 are included in this report. these include a letter denoting the subgroup of the respondent, but the associated numerical codes are randomised for each item, so the number doesnot correspond to a specific individual.

N.B. Each panel member receives an individualised version of this report that either includes a column showing which response they gave, or has * denoting their selection, depending on the item type.

Burdens of serious research misconduct

Item 2: How common is the problem of serious research misconduct?

Table shows percentages selecting each option in each group. NB For this item, the options are mutually exclusive.

(For personalised reports, * denotes your response).

Options	1_S	2_R	3_O	All
A) Serious research misconduct is rare relative to the amount of published research literature	11.1	40.9	38.1	26.6
B) Serious research misconduct is becoming more prevalent and starting to pose a threat to the research literature	16.7	36.4	33.3	26.6
C) Serious research misconduct is already common enough to pose a major threat to the research literature	72.2	22.7	28.6	46.8

Free text comments on item 2

Free text

2.2_S1) Due to my own investigations (not disclosing those here to remain anonymous) I know of several fields that have been heavily targeted / affected by articles with evidence of serious research misconduct. There will be a very high chance that genuine researchers will use articles for reference that are completely fabricated. These researchers are probably not aware of the problems present in these articles.

I personally believe these articles to have such a big effect that it is difficult for a researcher in the field to understand what exactly is going on.

2.2_S2) I have defined serious misconduct as being frequent in the sense that paper mills have seriously compromised the literature in some fields.

2.2_S3) Last time, I probably answered that it is relatively rare and I think I was thinking about this more in terms of:
- it is unlikely that at every department in every university, we would be able to find a researcher who would have committed misconduct (but we will find them, it's just not every other colleague)
- when we screen the literature in our field just to find some general information, we are most likely to find genuine papers by serious and honest researchers

However!
It is true that when you dig deeper into sources that may not be your general go-to, like some smaller, more obscure journals that pop up even in Scopus, you will find A LOT of suspicious stuff - systematic reviews are quite seriously affected by this.
And just today, I met with a colleague from a different field, who told me that the rate of fake results being published in some fields is much higher than my own, going up to 40%.
I was shown this preprint from outside of my field, which quotes 19% https://doi.org/10.1101/2024.02.13.580196

Another note relevant to specific fields - the predatory editorial practices of very popular mega journals like Frontiers and MDPI, who constantly litter scientific literature, allow for the publication and development of pseudoscientific topics (which are more visible in some fields than others). As one may expect, a lot of signs of misconduct can be found within that literature. The journals publish a tonne of opinion pieces and commentaries but I am also seeing more and more actual empirical papers supposedly providing support for pseudoscientific theories/practices. The issue is that it takes time to look through them thoroughly to spot the exact issues, report to

the journal or comment on Pubpeer.

At the same time, the current editorial practices enable fraudsters and pseudoscientists to produce and publish a lot - quicker than we can catch up. Sometimes it can be just one person who is committing misconduct (which could be seen as a rare occurrence) but they publish a lot very quickly (then it will look like a lot if we look at the publications and their impact over the years).

So now I think of the issue as much bigger.

2.2_S4) Instead of limiting the threat to research literature, I would suggest the impact of research misconduct is more concerningly applicable to the wider landscape of research, including how it is conducted, attributed, and findings implemented or carried forward in society.

This can be seen from the issues that arise in certain fields, such as vaccines, when studies are published that have research integrity breaches. Public trust in research is further eroded through high profile cases at top universities and/or in specific fields, including those mentioned in the following articles:
https://www.theguardian.com/education/2023/jun/25/harvard-professor-data-fraud
https://www.theguardian.com/education/2023/jun/25/harvard-professor-data-fraud
https://www.science.org/content/blog-post/faked-beta-amyloid-data-what-does-it-mean

In reaction to one of the comments above, it is sad to say that how often research misconduct occurs cannot be measured by 'proven' allegations or the number of allegations. Issues rarely get escalated, internally or publicly, and when they do, many of the complainants will have been treated badly for a while or to a rather extreme degree, and will tend to be emotional. Not all complaints will be about the actual issue, and most issues will not lead to complaints, but that doesn't mean there aren't a solid number of serious issues. It takes time, but one should not lose track of seeing the forest through the trees.

A short work on the impact of being transparent can be found here: https://www.digital-science.com/tldr/article/vaccine-hesitancy-and-the-importance-of-trust/

2.2_S5) Many entire fields have zero checks on integrity. Those of us who do check are punished. People don't want to look under the rug because they know what they find will look bad.

2.2_S6) "The research literature" is not monolithic. Some research fields are fine; some are contaminated to the point where researchers must struggle to decide which papers are trustworthy, with major journals hopelessly corrupted.

2.2_S7) The lens by which people answer this question is likely influenced by their research discipline (if they have one), their sleuthing experience and how long they have worked in this area. Having worked in systematic reviews for 25y on similar biomedical topics it's clear to me that fabricated trials in my areas have become more prevalent, and they do affect the literature.

2.2_S8) 1:6 papers having data issues is concerning https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/full/10.1111/anae.15263

2.2_S9) I think it is rare and I am not sure it's becoming more prevalent. However, it is posing a threat to the research literature even if it has remained rare.

2.2_S10) [redacted]

2.2_S11) I do understand that you are defining serious research misconduct to be intentional. BUT: we cannot determine intentionality from the outside. We see actions that lead us to believe that the behavior was intentional. For plagiarism, the plagiarism exists completely independent of any intention! Intentionality can have an effect on the sanction (if any). But a text that copies words or ideas or work products of some identifiable entity WITHOUT proper reference *is* a plagiarism and thus research misconduct. If it is more than a few words here or there, it IS serious.

2.2_S12) It is difficult to estimate changes in prevalence when serious research misconduct is and was covered up both by culprits and the organisations in which they work(ed), their colleagues, etc.

2.2_S13) In my field (clinical trials) it is rare as there are now so many checks in place (funder checks and reviews, ethics, R&D approvals, DMECs, trial steering committees, published/reviewed protocols, journal focus on good

research conduct, etc.). I suspect that in other fields it is easier to get away with serious research misconduct. I feel that funders and publishers are critical, with the smaller charitable funders and the lower impact journals not being as rigorous in their checks, this strikes me as meaning there is always someone willing to fund or publish research without checking for research misconduct. The very systems we work within are therefore set up to ensure 'success' in research misconduct, if you persevere and are creative enough.

2.2_S14) The detection of serious PFF has improved. The distribution of PFF is uneven across countries and disciplines. In some disciplines,papers with PFF dominate

2.2_S15) This seems like something that could have multiple meanings as the question responses seem to be based on the amount of publications, especially the middle response of '...starting to pose a threat to the research literature' - what is constituted as a threat? Does it need to be prevalent to be a serious threat? Or just (seen as) high impact, and leading the research area in a specific direction? A small percentage of papers in high impact journals, or ones which are widely publicised or based on current hot topic issues, could have impact far out of proportion to how often they occur. Or was the question intended to indicate normalisation of the practice? Two examples which could be argued to greatly impact the research area and affect research direction would be the recently retracted landmark Alzheimer's paper (https://www.science.org/content/article/researchers-plan-retract-landmark-alzheimers-paper-containing-doctored-images) and Wakefield's infamous Autism-Vaccine link paper in the Lancet. Even if those were the only two retracted papers in the past 30 years (which would make misconduct very rare by the percentage assumption), they have influenced their respective research areas for many years, and could be argued to 'threaten' the literature landscape in those fields.

2.2_S16) 1. The sleuths tend to identify problems with a high percentage of people they investigate (and they tend to cover mainly duplications).
2. The reproducibility of published studies was already low a decade or so ago (the famous replication study 8/65 replicated)
3. The increasing pressure to publish and the decreasing incentives to review properly.

2.2_S17) Serious research misconduct is posing a threat to trusting the scientific literature. Thus, I consider this a common enough problem to warrant a significant threat. Of course, any misconduct can be weaponised for political gains, which we are also seeing. So, we have a major threat to trusting the research literature.

2.2_S18) While I believe research misconduct is rare relative to the amount of research published, and fraudulent researchers are rare relative to the wider research community, I worry that fraudulent researchers have a disproportional threat to the way research is practiced. These type of fraudulent researchers review more papers, edit more journals, and potentially supervise more graduate students. The medium- to long-term effect of this will be universities that recruit and promote a certain type of hyper-prolific researcher, and journals and publishers that favour a type of shallow research. This might make it harder for legitimate researchers to publish papers and establish themselves in academic careers.

2.2_S19) I hope we do not fall in the trap of trying to provide an overall estimate. I tend to think of this as a landscape or a spectrum, not just in terms of seriousness of the offenses (from "perfect practices" to QRPs to serious research misconduct) but also in terms of the types of SRMs, e.g. mass production and distribution of fabricated articles by paper mills where each article alone has little impact but the overall effect might be very significant, to high "quality" high impact fraud papers where one article published by a prestigious group in a prestigious journal has the potential to set an entire field on the wrong track for years. I feel that a focus on "amount of published literature" is maybe not super productive because it runs the risk of downplaying this diversity and complexity.

2.2_R20) Serious research misconduct is a major threat even if the total number remains low. It's commonly evoked in research literature and has deleterious effects on society confidence

2.2_R21) Suggested topic for discussion:
- What sort of culture best supports a trustworthy research system

2.2_R22) Talking about research misconduct has become more prevalent - but the number of proven allegations at my institution have not increased. This could indicate that serious research misconduct is becoming more common, whereas this view is not necessarily supported by the data.

2.2_R23) The issue we find is lack of reporting. We may not be made aware of all research misconduct matters as university departments may not follow the code of conduct and deal with misconduct complaints in house. We are trying to raise awareness of the requirement to report misconduct to the research integrity team

2.2_R24) This is a really hard one to answer and the options don't cover it because, as I said in round 1, No One Knows. We have a slew of examples and we have Unlikely Data Software Packages and the like but, I have to answer like a scientist: I don't know because I don't have the data. No-one does. I can't give an "I reckon" because I'm not an LBC caller. I chose 2 because forced. There has been more REPORTING of it, that much is obvious. This is where social media has been outstanding. The speed of exposing it, via the obvious candidates and retraction watch, has helped uncover egregious res. misconduct.

2.2_R25) While the prevalence of misconduct is minimal, it's impact is significant.

2.2_R26) Evidence suggests that prevalence of serious research misconduct varies by country. See for example some of the various analyses of retraction data. Of course retraction doesn't necessarily mean that serious research misconduct has occurred, but analysis that looks at the reasons does suggest that causes of retraction that would constitute serious misconduct are much more prevalent in some countries than in others. I don't think it is helpful to group all research into one bucket here: contexts (and drivers of misconduct as well as prevalence) varies enormously by country.

2.2_R27) I hope misconduct is happening less and less. But researchers face more pressure, and there are more temptations for misconduct. New tools of artificial intelligence also play a role.

2.2_R28) The rise of paper mills in all likelihood increases the (relative and absolute) amount of published research literature based on serious misconduct.

2.2_R29) One important issue is that we do not really know how common it is, since identifying misconduct is often very difficult.

2.2_R30) Despite it being an empirical question, I still believe it to be vague if considering intention as an criteria for serious misconduct.

I have been thinking about how to quantify or count the prevalence of misconduct: whether by counting fraudulent publications or authors/researchers (who may publish several fraudulent papers)? For instance, a group of 2-3 researchers could publish several papers on the same set of fraudulent data - this could still be counted as a single case. This is also reflected in handling misconduct cases when several instances are grouped together as part of a single proceeding or case, instead of starting a separate procedure for each published article.

However, there are areas where robust data about the prevalece of misconduct could be missing - for instance proposals, assessment (even in peer-review), public reports (especially when translated into national languages) and other similar documents, not published as research literature.

2.2_O31) Unable to make an assessment without more information. As a systematic reviewer I often see examples of potential misconduct and in some instances it could pose a major threat to our understanding. However, I don't know the prevelance - it's not easy to identify and that makes me think that research misconduct my be higher than rare. It's a second question as to whether this poses a threat...

2.2_O32) Lack of reproducibility is more frequent that what is though

2.2_O33) In addition to a worrying rise in the number of retractions from the research literature, the rise of paper mills and their pollution of the literature is a concern.

2.2_O34) I selected "rare" in view of the phrases to define "serious research misconduct": "serious", intention to mislead", "requires appropriate sanction". Although rare, it undermines the credibility of research and engenders public's mistrust of studies with important clinical implications.

2.2_O35) No citation except human nature. While sloppiness is common, deliberate misconduct I suspect is rare. If it takes more effort to fabricate a convincing study as to report the actual results, most humans will follow the path of least resistance.

2.2_O36) The current best guestimate seems to be that about 4% of published articles should not have been published at all, because the fulfill the COPE criteria for retraction. This figures seems to be on the rise due to the growing volume of paper mills fuelled by generative AI.

2.2_O37) I believe some cases of serious research misconduct have been deliberately framed by journalists to attract public attention, creating a false impression that such cases are more common now than in the past. This has led to an unprecedented level of public visibility on the issue. Sites like Retraction Watch contribute to this perception. While high pressure and new publishing metrics may lead to more sloppy research, this does not always equate to serious misconduct. Rather, I think these are longstanding internal issues that are surfacing more frequently due to the increasing pressure to publish.

2.2_O38) Each case of serious fraud is one too much certainly if it impacts the quality of patient care

2.2_O39) https://freakonomics.com/podcast/why-is-there-so-much-fraud-in-academia/

according to this podcast, 10,000 papers were retracted last year.

Item 3: How harmful are the impacts of serious research misconduct to different segments of society?

Please code as 1 (low harm) to 5 (strong harm).
For items using 5-point scale, the summary table shows the percentage selecting option 4 or 5.

Subitem	1_S	2_R	3_O	All
A) Consumers of research findings, e.g. patients whose treatment is informed by medical research or policy-makers who depend on research findings	77.8	100	100	89.9
B) Other researchers who try to build on fraudulent findings	80.6	95.5	71.4	82.3
C) Other researchers who are based in the same lab, or collaborate with, a fraudulent researcher	80.6	77.3	61.9	74.7
D) Funders, whose funds are wasted	69.4	77.3	42.9	64.6

Free text comments on item 3

2.3_S1) I don't believe that sharing a lab or collaborating with someone who turns out to be fraudulent tarnishes me. I stand on my own feet.

2.3_S2) There is evidence that serious misconduct in papers delay treatment and development of new treatment

2.3_S3) I put research waste lower because there are so many other ways to waste funding that I don't think this is has such a large impact.

2.3_S4) I have rated the funders lower for consequences, as they often have other investments to mitigate any impact from research misconduct, they are usually left out of being held accountable, and yet have a relatively high importance to those publishing through (monetary) pressure and power. As such, I believe they could do much more to solve/avoid the issues, yet are largely held unaccountable.

2.3_S5) I have checked 5 for everything because I can, and because I feel very strongly about this. But everything is relative. This question would be much, much better with a forced rank order.

2.3_S6) Education suffers a lot due to research misconduct as professors teach students to cheat. They also pay less attention to teaching. This fact is often overlooked in the western world but has a massive impact in developing economies like India

2.3_S7) Funders don't care if "their" funds are wasted on fake science as long as it's published in fancy journals. The public who funds the funders is kept clueless and entertained with bullshit media reports about "breakthroughs".

2.3_S8) I would add "other researchers, who fall behind in the race for tenure / promotions because they are not faking results or buying papers from papermills; and who struggle to publish because journals have fallen into the hands of career fraudsters."

2.3_S9) I have moderately increased my response regarding harm to funders, to account for funders which make use of public or taxpayer money. There is also the risk that research work that has not involved misconduct is impacted, as the funds have been wasted on unreliable or untrustworthy research.
Reputational damage to collaborators not involved in the misconduct, or building on fraudulent findings, is difficult to gauge. On one hand there does need to be some responsibility and accountability during collaboration or continuation of work - there seems to be an issue where people are simply not checking sources (see citations still occurring even after a paper has been retracted: https://retractionwatch.com/2015/07/14/half-of-anesthesiology-fraudsters-papers-continue-to-be-cited-years-after-retractions/). I have also seen situations where work is not fully reviewed or fact-checked between collaborators - in one case, 30+ year old data was used as a reference, in another an acronym was not checked and let to references from papers on completely unrelated topics. This seems like a situation where it would be very easy to miss more serious misconduct. On the other hand, collaborations without a minimum of trust from the get-go are much more challenging to manage.

2.3_R10) The harm comes from decision that are made with good intentions, but which turn out to be bad decisions because of the bad or fradulent evidence. The fault is thus not with the decision maker even if they are often the ones who reap the consequences.

2.3_R11) One cannot ignore specific geographical and geopolitical patterns/concentrations as well as jurisdiction-specific root causes of research misconduct

2.3_R12) I might have answered differently in the 1st round, but based on the clarifications and comments, however I still believe the first two items to have a more direct harmful impact on individuals, whereas the last two items have a less direct impact.

The 3rd item is less severe if the "fraudulent researcher" merely worked in the same academic unit (which can be quite large). It can be quite severe, if they work together in a team or regularly publish together as co-authors. So, it depends on the extent and type of cooperation. Also, to some extent this type of revelation could be regarded as positive since it shows that the academic unit is able to identify misconduct among its members.

The 4th item is also less severe, as not all of the funding goes to waste, depending on the circumstances. Similarly, a research project with negative results or high-risk projects that do not realise its promises could be seen as a waste of funds. So it depends whether the researchers wanted to show meaningful results where there were none – then it could be re-conceptualised as "negative results" which could fall within the acceptable margin of risk the funders took. If they were cutting corners to simply conduct research faster and the whole research must be redone in order to verify the results, then it is more of a waste.
However, funding also has a specific type of risk related to it being prone to political interventions in the form of "preventing waste" or reducing redundancy. In such a case, a funding related scandal could impact the public research funding of all fields. I didn't even think of such a possibility during the 1st round, but after seeing what is going on in the US, I would consider this at least a possibility.

2.3_R13) Suggested topic for discussion:
Another way of thinking about this might be to think about the impact on individuals (beneficiaries, participants, research community, etc.) and impact on infrastructure (research record, funding, etc.).

2.3_R14) N/A

2.3_R15) I call this cheating. Cheating can never lead to well-being in any field. It is always a huge harm. It is impossible to build anything good on misconduct basis.

2.3_R16) Slightly odd wording in this one because I can see that 2 and 3 represent an horrendous WASTE of effort and time, but not harm. But waste comes up in number 4. The "harm" to funders in having funds wasted is not the same as the harm which patients would suffer- i.e., actual, physical threatening harm. So there's a mix of figurative and literal here.

2.3_R17) I think that inaccurate and vexatious allegations are possibly becoming much more harmful than actual (proven) misconduct. Such allegations and playing our of allegations in public, unregulated arenas affects the reputation of research among consumers and impacts on investment decisions (e.g. by govt funding agencies). Similarly, untrue communications that target researchers are damaging to research and to the public, see this article: Prasad V, Ioannidis JPA. Constructive and obsessive criticism in science. Eur J Clin Invest. 2022 Nov;52(11):e13839. doi: 10.1111/eci.13839. Epub 2022 Aug 1. PMID: 35869811; PMCID: PMC9787955.

2.3_O18) Researchers or those who collaborated in the study are less impacted because they have other publications that were legitimate. However, they should have looked at the publication (methods, results, data) before signing on to it.

2.3_O19) This is not easy to answer, as cases differ a lot in their impact.

2.3_O20) The impacts of serious misconduct are wide-reaching so I have chosen 5 for all categories. Quite apart from the funds wasted through the withdrawal of a fraudulent or flawed study, there is also a considerable waste of resources for those who use that data in their own work.

2.3_O21) People I know who worked with convicted fraudsters seemed to have suffered brief or little impact on their own careers

Goals of those responding to serious research misconduct

Item 4: In responding to serious research misconduct, several goals may be considered.

Please rate how important each of these is, from 1 (unimportant) to 5 (very important).

This table shows the percentage giving the highest ratings (4-5).

Subitem	1_S	2_R	3_O	All
A) To correct the academic record	86.1	86.4	71.4	82.3
B) To deter others from committing fraud	72.2	59.1	76.2	69.6
C) To maintain public trust in research	52.8	77.3	85.7	68.4

Free text comments on item 4

2.4_S1) "Focusing on punishing offenders may simply make it more likely for people to hide issues or work less transparently. I have seen serious research misconduct committed in an attempt to cover up questionable research practice, after the questionable practice was pointed out." People who are willing to participate in a coverup have

sacrificed the right to be a scientist.

2.4_S2) I filled in 5 for all three, which might make your job more difficult, but I really feel this way. I also think that these 3 feed off each other.

2.4_S3) Nobody is deterred by retractions.
People just learn not to get caught, see services provided by Proofig

2.4_S4) I would still consider all of these to be quite important, but the academic record should still be the priority. I agree with the comment that the allegations alone, if proven, are punishment enough in an environment where a good reputation is essential.

2.4_S5) I expected the option: To hold fraudster accountable for their deceptive actions (i.e. we cannot let them act with impunity)

2.4_S6) The public's trust in science is already shaken, so we are maintaining on an already low level. The general public and the journalists never see the retractions. Once a story is out there, it can't be pulled back in from the public eye, even if there is a retraction. Thus we must do everything to avoid academic misconduct from entering the academic record at all.

2.4_S7) All of the above are very important. I am not sure deterrence works terribly well (as per 70_1_S above) but those pragmatic considerations must not deter us from holding perpetrators accountable.

2.4_S8) All of these options are not important. Firstly, the "academic record" is mostly beyond salvage, adding a correction on a journal website does nothing much helpful. Secondly, there is no deterrence that will prevent people who want to commit fraud from doing it. Lastly, no one should strive to cause the public to have trust in research against their will, they shouldn't trust research.

2.4_S9) Without consequences for serial perpetrators our chances of restoring science rigor and integrity are slim. It's just human nature.

2.4_S10) I found the comment 20_2_R interesting. Whilst I agree that an allegation proven against you should be a good enough deterrent, the key is whether this outcome is 'known'. The vast majority are not known as institutions work hard not to make the outcomes public. This allows these people to carry on regardless. I have seen two of the most serious upheld cases in my institution simply move to other prestigious universities and I doubt very much if their behaviour has changed.

2.4_S11) Unfortunately the aim of maintaining public trust in research is often the reason for concealing research misconduct. How does silencing whistle-blowers to maintain public trust in research differ from silencing whistle-blowers to maintain public trust in institutions?

2.4_S12) To correct the academic record is a prerequisite of maintaining public (including scientists themselves) trust in science. It is an important goal per se, independently of the issue of serious research misconduct.

2.4_S13) 'To maintain public trust in research' is a goal that can be catered to in different ways. One that supports good research conduct and integrity, the other would be the strategy to hide and negate any wrongdoing - the latter is something that institutions will often veer towards, for as long as they can. As such, I have rated this of low importance, as its importance depends in how the trust is won.
Do I think it is important to maintain public trust by being transparent and open, also when things go wrong? Such as publishing findings of all research conduct investigations and how they got there? Yes. That would be a 4 or 5 for me.

2.4_R14) I think I answered differently in the 1st round, but as I look at these now, I believe these three are equally important, yet distinct goals. Correcting the academic record is an important epistemic goal as the over-arching goal of scientific research is to improve our understanding of the world. Althouhg, correct and truthful academic record is not a goal in itself, it is instrumental for this grander aim of improving knowledge. I interpret correcting records in a wider sense as correcting all errors, inaccuracies and mistakes in academic and scientific work. This is co-aligned with the value of truth.

Deterrence is also important, but this again in itself is not the main goal of handling misconduct cases. The grander goal here would be related to honesty and fostering honest and fair behaviour in the research field. Deterrence is instrumental in this, but by putting too much effort on deterrence (for instance increasing sanctions) we could lose sight of the real aim which is to foster honesty. This is co-aligned with the value of honesty – which is often mentioned in various research integrity related codes, guidelines and other documents.

Similarly, public trust is important, but again as means to better achieve the main goals of scientific research, which is to improve our understanding of the world, use this knowledge for the benefit of mankind and by doing this, strive towards the flourishing of human and natural life. Public trust acts as a credit that bestows specific privileges on researchers, if they continue to work towards this common goal, they can enjoy those privileges in terms of funding and special access to some types of data. Again, trust is not an end in itself, but it is certainly instrumental for the research system, as lack of trust could lead to serious repercussions.

Just as an illustration, if the research system would have a meticulous academic record, effective deterrence and absolute public trust without trying to improve our knowledge of the world or helping mankind, it would be a failed research system. Therefore, the goals mentioned are only instrumental, not the end-goals.

2.4_R15) I am against 'maintaining public trust in research'. Research and science must be questioned all the time. It is not about the trust!

2.4_R16) N/A

2.4_R17) From the answers in Round 1 I read, it is interesting that "avoiding the same kind of misconduct in the future (e.g. by the same researcher)" is not taken over as a goal, replacing "punishing offenders". It is key, as I have the impression some experienced researchers have lost the ability to learn. Once they are subject to incentives which make them commit misconduct, they are likely to commit again (even after an investigation). Fraudsters are gonna fraud, respondent 24_1_S noted. In this light, the removal of such individuals from the research community after their identification makes much more sense (also given the abundancy of excellent candidates for permanent research positions to replace them and given the public money such continous scrutiny would cost)

2.4_R18) The goal of responding to serious research misconduct could reasonably be to ensure that research is correct and if need be corrected and withdrawn. Processes to do this need to be fair and proportionate, also carried out with due care and regard for everyone involved. Some of the alarmist rhetoric is unhelpful to the careful progress that needs to be made.

2.4_R19) public trust in research depends on a variety of additional considerations

2.4_R20) All three are extremely important.

2.4_R21) Suggested topics for discussion:
- How to promote scholarly debate that lives up to the principles of research integrity
- How to develop a culture that encourages accountability
- Creating a culture of learning, care and respect which also deters repeat offenders

2.4_O22) All of these options are important.

2.4_O23) the pressure to publish or perish is intense and I doubt the few who are caught will serve as much of a deterrent.

Publicity of these cases will increase rather than decrease public trust.

2.4_O24) The three goals are strongly interwoven.

2.4_O25) Criminologists tell me that deterrence by severe sanctions hardly works, but that the main factor for deterrence is the likelihood of being caught.

2.4_O26) Correcting the academic record in cases of serious research misconduct should be feasible once an investigation is disclosed, but I believe it is impossible to correct the entire scientific record. Instead, we should consider utility—prioritizing corrections for research that has a significant societal impact. A clear example is the

case of hydroxychloroquine as a treatment for COVID-19, an important correction that has yet to be fully addressed despite its widespread consequences. For me, the key lesson from cases of serious research misconduct is understanding how to manage the message that reaches the public. There have always been fraudsters, and it is impossible to eliminate new cases of fraud entirely.

2.4_O27) I don't think it will have much effect on deterring fraud. For whatever reason, all kinds of investigators, from the novice to the well-established, keep doing it.

Factors hindering academic institutions' response to serious research misconduct

Item 5: Various factors may hinder academic institutions' response to serious research misconduct.

Please rate the following from 1 (not much of a hindrance) to 5 (substantial hindrance)

Subitem	1_S	2_R	3_O	All
A) Lack of co-ordination between relevant research actors, such as institutions, funders and publishers	69.4	66.7	61.9	66.7
B) Conflict of interest for institutions investigating their own researchers	91.7	52.4	52.4	70.5
C) Lack of resources	38.9	76.2	47.6	51.3
D) Lack of expertise	55.6	57.1	47.6	53.8
E) Concern about legal repercussions	61.1	47.6	47.6	53.8
F) Bureaucratic delays or inefficiencies in the investigation process	65.7	52.4	81.0	66.2
G) Complexity of cases	41.7	36.4	61.9	45.6

Free text comments on item 5

2.5_S1) The shared responsibility comment is interesting - it does seem like it's easy to demonstrate a 'hot potato' attitude between stakeholders when allegations arise. The lack of accountability (not punishment, but ultimate ownership over the work) for any individual group may exacerbate this.
In my experience with reporting misconduct, conflicts of interest and complexity of cases will remain the most challenging hindrances to address. How can an informed, impartial review by third parties be efficiently carried out on work that is by it's very nature pushing the boundaries of knowledge, conducted by the foremost experts in the area who have built their entire career around it? It is unrealistic to expect review committees to become experts in every field. This seems like a top-down issue.

2.5_S2) I think that lack of expertise and conflict of interest in combination make an interesting mix for those who are responding to reports of misconduct. It sometimes feels as though they approach this with a patronising attitude and disbelief if they don't have the experience to see the issues for what they are. In contrast, those who have seen or investigated issues previously don't get fooled so easily, even when it comes to their own colleagues/employees.

2.5_S3) Universities do not care about scientific integrity, as they are only interested in rankings and overheads from grants.
I highlighted these in [redacted].

2.5_S4) Lack of motivation? It is my impression that the importance of research integrity visible in nice statements on Institutions' websites and VPs discourses is not always matched by a real practical and significant political commitment (that would translate in resources, etc). I put this in "conflict of interest" with a rather broad definition of the term. I would also add another subtle aspect to the conflict of interest: a (possibly often genuine) desire to avoid harming their own researchers who are colleagues and students of the fraudsters.

2.5_S5) These have been scored directly from observations through experience.
Lack of co-ordination - there was 'co-ordination' in the cases I observed, which was not conducive to a fair process. This co-ordination was to share information to undermine the complainant on several levels.
Conflict of interest - was extreme, to a point of expressly not adhering to policies.
Lack of resources - though there was a lack of resources, and I can understand in other cases this could be an issue, the issues in this case weren't due to it but due to blatant ignoring of very clear policies and procedures.
Lack of expertise - similar to the above. Policies and procedures were not hard to read or understand. The researchers appointed to the case should have been on a cognitive level that would have had no issue in correctly interpreting and implementing the policies and procedures as written. However, in the end, a panel attributed failure to unclear policies and that these should be reviewed - surprisingly as a much more junior researcher was perfectly able to understand, interpret and apply them, whereas two senior researchers and several C-level university administrators were repeatedly incapable of doing so; for some reason all these mistakes were also made in favour of the accused and avoided transparency.
Concern about legal repercussions: the position and connections of one of the accused could have added to fears in addressing the issue.
Bureaucratic delays and inefficiency: in this case time wasn't very important, and there was little haste made by the investigators. As such it did not appear to be a restriction to the process.
Complexity of cases: parts of the case presented were complex, other parts were not. The parts that were not were refused investigation and responsibility there was denied. In addition, there was little done to avoid or reduce complexity where possible. Elements of complexity were continuously introduced instead.

For the answers from others presented, my experience and observations significantly overlap with 22.1 and 10.2. I received a direct apology from an investigator (and the senior Research Integrity Officer) that the investigation would 'very likely' not go my way but that he was powerless as other people were pulling the strings on the outcome.

2.5_S6) "Lack of resources" just means "We don't want to spend money on this". There's not some kind of choice between investigating fraud and keeping the lights on. But there may be a choice between investigating fraud and going to a reception organised by the city.

2.5_S7) Lack of will; plain and simple. The amount of blatant research fraud out there (i.e., not sophisticated fabrications) is obvious to anyone willing to look. My experience is that even when it is an open secret that a fraudster is at work, an institution can be wilfully blind.

2.5_S8) Complexity is not an issue. I have seen cut and dried clear cases take years to deal with because of bureaucratic delays - or people dragging their feet because they don't want to take a decision. There is much concern about legal repercussions, but this is entirely unfounded.

Topics: Universities are in funding crises at the moment and thus have little space to be thinking about good academic practice. How can we deal with this?

2.5_S9) Investigations don't work because people in charge of investigation are often dishonest themselves. And the honest investigators are afraid of repercussions against themselves.

2.5_R10) Lack of co-ordination: in my experience, there is evidence of a joined-up approach across institutions, funders and publishers who all wish to see any issues addressed in an open and transparent manner as possible.

Conflict of interest: in accordance with sector best practice, institutions appoint at least one external panellist to ensure objectivity in the decision-making process. This can extend the process as external panellists are difficult to identify. Panellists are also required to formally declare any conflicts of interest at the start of the process.

Bureaucratic delays: this can often be compounded by the Complainant. I recently dealt with one case where the Complainant submitted over 300 pieces of evidence - usually in large tranches just before a Bank Holiday weekend. This meant that I had to work over the Bank Holiday weekends to ensure that every item was reviewed and that there were no further delays to the process.

2.5_R11) we have found it particularly difficult to get responses from journals which have published articles where there is a misconduct concern. Investigations within the university which do not involve outside publishers are less problematic as we have a rigorous procedure in place regarding investigations and the neutrality of the lead investigator.

2.5_R12) It struck me, after Round 1, and thinking about resources and complexity and so on but we have done with with students suspected of fabrication for years- we ask to see their original materials, see their data, match sigs on consent forms (when these were physically signed), use TiN, invite them for interview to discuss their method and findings if there are suspicious features. It has been routine. That universities may not do this for staff suggests (1) they take staff RMc less seriously, (2) they make take it less seriously because it doesn't matter (3) it does matter or the risk of spotlighting your bad apple is too great or (4) there is indifferent or disdainful inertia. I had one experience of the latter and it was on a pretty important integrity issue.

2.5_R13) Suggested topic for discussion:
- What enables institutions to address research misconduct? (This would allow the discussion to focus on solutions.)

2.5_R14) This question is oddly phrased - it asks about what factors 'may hinder'. Is this meaning to ask what does hinder (which is a completely different question). All of the factors may hinder responses to misconduct, but surely what matters is whether it is the case that in fact these things do hinder.
Also, academic institutions vary within countries and between countries in scale and specialism but also in terms of the ways in which an institution is structured, governed, resourced, and the ways in which processes and policies are laid out and put into practice. I find it virtually impossible to provide universal answers about academic institutions and have answered only for my own country context. Might the meeting in April discuss differences between institutions/contexts?

2.5_R15) It is remarkable how high "Conflict of interest for institutions investigating their own researchers" was rated among 1_Sleuths and overall. I see the point, but the agreement is striking. Having been on the institutional research integrity office side, I have not seen that explicitly in my institution. More than a real problem, I guess the biggest impact of this self-regulation is that candidate-reporters have no trust in a hypothetical investigation and do not report after all. This is suggested also by what happened in Sweden: When Sweden established a national governmental board for research integrity investigations instead of regional offices (it were no institutional investigations before, but the investigation took place at a closer-to-institutional level than nationally), they were overrun by an unpredictable high number of cases. Since 2020, they published 128 decisions so far. https://npof.se/en/decisions/
I wonder if this "conflict of interest in self-regulation" can be on the agenda for discussion in April: even if institutions genuinely take this seriously, doesn't the perception of this COI affect the outcomes more than the actual COI?

2.5_R16) Other factors: Lack of adequate technology (particularly with AI); lack of jurisdiction in perpetrators' home countries; conflict of interest of publishers

2.5_O17) Reputational considerations are likely strongly connected to cultural habits. Many universities in Western countries now seem to understand that 'sweeping research misconduct issues under the carpet' can harm the institutional reputation much more then taking appropriate action and open communication. But this is by no means universal.

2.5_O18) In my own experience as an adjudicator, 1) journals recused themselves from any responsibility, 2) there was adequate research expertise and university admin support, 3) the process took two years, 4) legal repercussions were not a concern

2.5_O19) This issue is multifactorial, the more significant factor(s) depend on the institution.

2.5_O20) I believe that these factors are linked. If an institution is conflicted about a case, worried about its reputation, and without an investigative structure lacking appropriate expertise or resources, then its response will most likely be inadequate, especially where they are trying to deal with a complex misconduct case.

Factors driving serious research misconduct

Item 6: What is the impact of these factors in encouraging researchers to commit serious research misconduct?

Please rate from 1 (little impact) to 5 (large impact)

Subitem	1_S	2_R	3_O	All
A) Low probability of being detected and/or reported	86.1	54.5	61.9	70.9
B) Low probability of being punished if detected and/or reported	77.8	40.9	52.4	60.8
C) 'Publish or perish' culture and incentive structure in research (e.g. progression, promotion, recognition)	91.7	95.5	81.0	89.9
D) Fear of losing one's job if not sufficiently productive in publishing in prestigious journals	52.8	63.6	66.7	59.5

Free text comments on item 6

Free text

2.6_S1) At least none of the options were "risk of perishing"

2.6_S2) I think fear of losing one's job is a lesser concern than the desire for fame, impact, and citations. The prime examples of the serious fabricators were never at risk of losing a job, they were just out to be famous and accumulate power and reputation.

2.6_S3) As noted by one of the comments above, the worst cases I have seen are (simply and crudely put) narcissists verging on psychopaths. They want to be idolised and they never/rarely consider the impact of what they are doing and nor do they care. The worst cases are already at the top (e.g., professors). I guess they probably started early in their career, but they get worse the higher they progress. Yes, low likelihood of being detected or punished contribute, but it's more complex than this. In my view, the biggest problem is institutions don't just fail to detect/punish, but they actively protect these people withy international reputations.

2.6_S4) Fear of losing one's job if not sufficiently productive in publishing in prestigious journals - The impact of this factor is probably quite different depending upon the individual researcher. Well-established researchers probably have little concern about their jobs, brand-new researchers, researchers on a contract, researchers who do not have tenure presumably care a lot about building their publication record.

2.6_S5) High level of corruption in education and science in many countries. There is also different interpretation of what PFF are

2.6_S6) Huge variations between countries. There are (still) places where it is practically impossible for a researcher to lose their jobs and serious research misconduct does very much exist there.

2.6_S7) The third first-round comment here is interesting. Is the question not, "Why do researchers commit misconduct?" but rather, "Why DON'T more researchers commit misconduct, when the potential rewards are so high?". What are the barriers to committing misconduct, and can we impose more of these alongside incentive structures?

Not a full reference, but there is an interview on RetractionWatch around an integrity office director's experience looking at the behaviour of researchers who commit misconduct. (https://retractionwatch.com/2016/08/29/why-do-scientists-commit-misconduct/), and includes a comment that could be considered a response to the previous question about complexity of cases ("They might think that since they are an expert in their field at such a great level, that no one else would even understand the manipulations they attempt to hide.") as well as a discussion of personality traits.

2.6_S8) The last post might only apply to foreign students from.poor countries on precarious visa and even then only when PI is a bully.

2.6_S9) This is a paper that deals with rational choice theory:

Sebastian Sattler, Peter Graeff & Sebastian Willen. (2012). Explaining the Decision to Plagiarize: An Empirical Test of the Interplay Between Rationality, Norms, and Opportunity. Deviant Behavior, 34(6), 444–463. https://doi.org/10.1080/01639625.2012.735909

2.6_S10) From my own experiences - the low probability of being detected and punished is an issue on multiple levels at universities, not only management, administration or integrity staff. It also concerns departments and even smaller teames.

People in a department become aware, at some point, of some questionable practices or even misconduct committed by colleagues. Some find it sensational and gossip about it with excitement. Others say that they don't want to know these things because it impacts their perception of that colleague, and consequently, leads to a poorer working atmosphere. On the other hand, even those who work directly with that person are unlikely to condemn their actions - even if they contribute to projects and knowingly participate in questionable practices contributing to potential misconduct. And I think that here, the "low probability of being detected/reported" is a big driver. Possibly along the lines of: 'If people around me know, and no one is doing anything about this, then I am safe. And if anyone is to be punished, it's definitely not me, but my colleague who is responsible for this.' There really is a misconduct-enabling culture at universities. And this culture also alienates those who try to speak up and report the issues.

2.6_S11) Existential pressure in short. Selection of the least scrupulous, people who produce spectacular results regardless of what the data indicate.

The risk to benefit ratio is almost zero, especially if you are successful in securing large grants.

2.6_R12) Another consideration are systemic attempts in the context of hybrid warfare to create distrust in science

2.6_R13) Still, I would say that the remedy is publicity.

2.6_R14) Suggested topic for discussion:
- How can recognition, reward and success measures be widened so that researchers feel encouraged, enabled and incentivised to live up to concordat principles?

2.6_R15) Academics are best placed to comment on this point.

2.6_R16) How these factors will play out depends entirely on context. For instance, the factor 'fear of losing one's job if not sufficiently productive in publishing in prestigious journals' This will depend very much by country, its economic situation and the kind of organisation that the research has taken place in. In April can we talk about this - drawing blanket conclusions on a global basis is probably not very helpful to the discussion and doesn't move us forward

2.6_R17) We know the incentive structure is to blame: https://www.vitae.ac.uk/vitae-publications/research-integrity-a-landscape-study

2.6_R18) Likely, the 1st item is the most influential because if detection is unlikely, all possible repercussions have limited deterring effect. The 2nd item is dependent on the first, but likely less important as these two should be considered together. If a researcher is accused of misconduct, then this in itself could be a severe blow to the researcher's reputation. A possible punishment is an additional consideration that will become relevant only if the researcher feels like there is a meaningful probability of being reported.

3rd item seems interesting as this could be an important part of the motivational aspects for misconduct. If, as the first comment says, the fraudsters are interested in fast progressions up the career ladder, then for this to work the career progression mechanisms need to allow such fast progression. If fast career progression wasn't possible, then it would be less likely to commit serious misconduct merely for career progression.

The 3rd item is also important in the sense that it reduces the need for misconduct – if the fraudster has nothing to gain, then there is no point in it. However, since I don't believe that the element of competition could be entirely removed from the research ecosystem, I don't believe that misconduct could be prevented by only changing the incentive system. Other elements are also needed.

The 4th item could be more important than I think, but considering the first comment, it is more likely that the fraudsters are interested in making a career which implies at least a basic amount of job security. Of course, there are those researchers whose jobs could be at stake, but I'm not sure whether they are that likely to commit serious misconduct as their jobs more likely depend on available financial resources (projects, grants) rather than not publishing enough. On the other hand, researchers who are afraid of losing their jobs could perhaps be more prone to make unsubstantiated claims in project/grant proposals. In general, fear of losing income is likely a very strong source of motivation as it poses an existential sort of threat – without income it would be difficult to pay for food, amenities, take care of children/parents/relatives, pay mortgage etc. But still I would say that the group of researchers whose ambitions include fast and successful careers are quite different from those researchers who are afraid to lose their jobs in terms of their motivations, values and perhaps also aptitudes/suitability for career in research.

2.6_R19) I remember a paper of yours, on salami-slicing, many, many years ago and I still think this -the academic as tree-felling papermill- is alive and well. The REF doesn't help and actively promotes it. It divides staff into research-active and inactive and the RI are the ones likely to progress and not stagnate because promotion criteria act in their favour, the further up the academic ladder you go. There *are* differences between, still, the pre- and post-92 UK institutions in this regard: L promoted to SL with 2 papers, say. There is a variety of routes to the most senior posts in the UK now (one institution has at least five for Prof) -but the commonest, and perhaps the easiest, is the quantity (perhaps, the quality) of your papers. Your promotion is secured by the weight of your pulp. So, what do you do? You churn. And then you bring out the salami.

2.6_O20) I believe that the main issue is determined by an interaction between the morality of the person and the local research culture. Like in all professions more people behave well when the organization culture enables and rewards that. And even in 'toxic environments' most (but less) professionals behave well.

2.6_O21) Actually, I think that the questions lack a very important point: the costs associated to be detected and reported. More clearly: the point is not probability alone, but probabilities times costs.

2.6_O22) Researchers may be similarly impacted/influenced yet do not commit misconduct, but a (assume) minority do.

2.6_O23) Recent studies I have read (especially the Dutch National Survey) point to the probability of being detected and punished (including dismissal) as a strong disincentive for misconduct. However, working within a poor research culture that persists in rewarding perverse incentives such as the number of publications (rather than quality) in high-impact journals (rather than in journals most likely to reach an appropriate audience) instead of valuing quality and relevance has to rank as very important.

Role of post-publication peer review

Item 7: Please rate the impact of the following from 1 = strongly negative to 5 = strongly positive in drawing attention to serious academic misconduct

Percentage rating 4-5.

Subitem	1_S	2_R	3_O	All
A) PubPeer	80.6	63.6	52.4	68.4
B) Social Media	52.8	22.7	19.0	35.4
C) Blogs/websites	66.7	45.5	42.9	54.4

Free text comments on item 7

Free text

2.7_S1) It depends on which social media platform and blog/website; the social media platforms are highly polarised. Meanwhile, blogs/websites can be very detrimental (e.g., front organisations using websites that look trustworthy) or very informative (e.g., knowledgeable sleuths blogging on current issues).

2.7_S2) PubPeer remains the single most "feared" entity for fraudsters. However, the consequences of PubPeer postings remain generally low for scientists who produce problematic data.

2.7_S3) I would still consider the use of social media to have heavy trade-offs in identifying and reporting misconduct, and agree with other responder's comments on this.

2.7_S4) While I think blogs and social media were initially extremely important (ForBetterScience, Elisabeth Bik's twitter profile), I think there's a slow but gradual shift to more 'high end' outlets (newspapers, journalists from Nature/Science) covering these cases. PubPeer always remains the strong backbone of evidence it has been from the start, but that's not for the 'general audience'.

2.7_S5) All of the above are very much double-edged swords. Social media can trigger accountability but it can also (and more frequently does) result in persecution.

2.7_S6) You *must* differentiate between X (where there used to be an academic sub-group but they are pulling out fast), Threads (which is disintegrating), Bluesky (which is growing but also belongs to one person) and Mastodon (a growing, federated system with a growing academic community).

Accusations on blogs and web sites are very vulnerable to being taken down. It depends on which country the servers are located which law is applicable.

2.7_S7) Pubpeer is increasingly becoming very closed. It can have a much bigger impact if it opens up.

2.7_S8) The impact is very important, even if the quality and character of the comments is not always of the highest caliber.

2.7_S9) [redacted]

2.7_R10) Suggested topics for discussion:
- How do we encourage discussion and debate that live up to the principles of integrity?
- How do we improve the structures and governance around research so that we are actively improving the system rather than just shining a light on its faults?

2.7_R11) How possible research misconduct can be reported will vary completely by country. Some of the social media examples listed are not available in some countries. Most countries have recognized channels to report possible research misconduct (for example through funders or through organizations). Many countries have whistleblower protections in place. The use of social media, blogs and websites is a free for all these days for bots, and algorithms that amplify the negative or sensationalist aspects of research are well known about. This has the very real potential to damage the reputation of research, and increasingly members of the research community are losing all respect for 'sleuths' because of the behavior of some of them. Perhaps the sleuths should consider regulating like the research community has to. PubPeer is moderated (no accusations of research misconduct) but it just seems these days to be a pit of image twin detection use and there are posts there that could be reasonably sent to organizations/PIs or funders first.

2.7_R12) whilst we recognise pub peer is used by a large number of academics, we do not find it particularly helpful in investigating misconduct as anonymous comments could be malicious, and if they are genuine the anonymity prevents us from following up with the complainant or gathering more evidence.

2.7_R13) I don't believe in throwing mud - particularly anonymously. Formal research misconduct processes have been set up to reflect certain principles, such as fairness and the prevention of detriment. If allegations are made anonymously, it is impossible to know what the motivations of the Complainant are (e.g. whether they are malicious and vexatious, which is in itself a form of research misconduct). If the allegations are not backed up by supporting evidence, institutions can find it difficult to investigate. In a court of law, opinions that are not substantiated by supporting evidence carry no legal weight. Should the same principle not apply to research misconduct cases?

2.7_R14) While good at publicising concerns, I think the majority of issues are highlighted within the research community.

2.7_R15) I'm not sure I can distinguish the impact of different social-media and online platforms in terms of their impact. Since these are public platforms, their impact is of similar nature – these provide free communication channels for potential whistleblowers or witnesses to turn attention to issues or problems within research institutions. Impact of a media platform, in turn, is mainly influenced by the size of its audience. Well-known blog-like websites (like Retraction Watch) could have quite a meaningful impact, whereas personal blogs of individual researchers with only a handful of readers could have only a minimal impact. However, journalists could pick up potential scandals even from less-read blogs.

These clearly have a place next to the formal mechanisms for reporting misconduct, but these cannot replace any of the formal procedures. At best, social media complements the official channels by providing a back-up or alternative way for reporting when the official channels are inefficient.

Another topic would be public discussion of public or well-known cases which in general is always positive. Although, there are some risks related to harm to reputation and malicious attacks against individuals, a polite and constructive public discussion is still positive in general. In this regard, some alternatives to official or formal mechanisms are needed, as these do not provide any room for discussions or dialogue.

2.7_R16) It is curious that neither Retraction Watch nor editorials by editors-in-chief are listed.

2.7_O17) Social media platforms like X are often used to name and shame individuals, but they leave little room for reflection on the act itself or the role of other actors involved in serious research misconduct. They are more effective at generating inflammatory content than fostering meaningful discussion. Some may argue that this pressure prompts a response from those implicated, but I am not sure about the quality of the message left for society. In contrast, I find PubPeer more effective, as it allows for deeper engagement and more thoughtful discussion. It provides more space for reflection and, in my view, is a more democratic platform. We should also encourage more people to post positive comments about outstanding research papers, rather than focusing solely on exposing flaws.

2.7_O18) anonymous postings are themselves of limited credibility and a platform for spurious or malignant attacks. Can't be trusted.

2.7_O19) While social media allows for anyone to post comments, the credibility of PubPeer and the likes for Retraction Watch are higher and they are more likely to be taken seriously.

2.7_O20) This role of this stage (post-publication) is very hard to examine in identifying fraud.

2.7_O21) Probably the most impact is achieved when a case is reported in media, such as newspapers or magazines, open to general readers. Consider the Macchiarini's case for example, or Francesca gino'.

Reporting serious research misconduct

Item 8: Official channels for reporting misconduct seldom work efficiently

Table shows percentages selecting agree/strongly agree.

Subitem	1_S	2_R	3_O	All
Moderately/strongly agree	94.4	22.7	61.9	65.8

Free text comments on item 8

Free text

2.8_S1) The Swedish national agency for this, NPOF, seems to work quite well! I even have the experience of being audited, and fully acquitted, because of a non-researcher filed a complaint. It was very thorough because I was personally very loosely connected to the project but still part of it. As a sleuth, this was a very interesting experience!

Everything they do is public record although quite anonymized.

https://npof.se/

Some criticism against them is that they are better at detecting relatively minor deviations from ethical approvals than severe research misconduct. Sweden is getting a new research ethics law to deal with this, because a quite high proportion are doing strictly illegal things now that aren't anywhere near this survey's definition of serious misconduct.

2.8_S2) Some numbers: I've flagged around 900 papers on PubPeer. A few dozen have been retracted, many more have been corrected (which should have been a retraction in 99% of the cases) and for the vast majority of these papers nothing ever happened.

2.8_S3) I've had mixed results. In one instance, a paper was retract within a few months of raising it with the editor. I suspect the editor immediately recognised the fraud and put pressure on the publisher to act (they found evidence of peer-review manipulation independently of my complaint, so it seems as if they retracted the paper for the most obvious reason). In other instances, the editor, publisher, and COPE representative seemed to pass responsibility to each other, without anyone taking responsibility.
If the will is there by the editors and publishers, action against fraudsters can be thorough and decisive (and relatively swift): https://ecoevoevoeco.blogspot.com/2021/05/17-months.html

2.8_S4) In my experience, research misconduct investigations (and related bullying and harassment investigations) are staffed by people biased against upholding complaints. I suspect this is primarily because: (a) it is easier to dismiss a complaint; (b) it is human nature not to want to go up against someone who may be very senior; (c) it helps to protect the institution from reputational damage (and fundamentally these people work for the institution). Processes and procedures are also biased in the same direction. The onus is always on the victim/complainant. The timescales for complainants are set in stone whilst those for the investigators are approximate. The investigations are opaque and do not allow for 'cross-examination' that could support assessment of the validity of statements, etc. Lawyers get involved and all of a sudden things grind to a halt and no one wants to take responsibility.

2.8_S5) The frustration is that in cases where the fabrication is so evident that a non-expert can see it in seconds, it still (sometimes) takes years to conduct an investigation, and, the correction of science is postponed (or just does not happen) even though it could and should happen quickly independently of establishing individual responsibilities (longer delays for that are quite understandable). One suggestion would be for institutions to transparently and publicly ask publishers for the publications of expressions of concern as soon as enough evidence that there are serious doubts about the reliability of the data have been provided.

2.8_S6) It takes enormous tenacity from complainants to get concerns about serious misconduct investigated.

2.8_S7) "Official channels for reporting misconduct" (to the extent that these exist)

2.8_S8) I was interested in the comment mentioning 350 pieces of evidence - I thought the case I was involved in had a high volume of evidence, but it was less than 10% of this. Putting together the evidence alone even for that amount took months of work, all of which had to be done outside of working hours.
It would be useful to consider potential channels for reporting that would support evidence gathering, not just reviewing/assessing.

2.8_S9) It is hard to even find official channels in the first place. This could mean a complainant has had to contact several people about an issue before finding the right place/support, which means extra unnecessary exposure in situations that are often already complex and delicate.

2.8_S10) I have reported on cases of academic misconduct without publishing in parallel on social media. Years later the universities had no idea that I had written to them, although they had acknowledged the receipt of the information. So many cases I have been involved with take years, often because people go to court in order to prolog the time it will take to reach a decision.

2.8_S11) When I reported, the case had to be reviewed and judged by different people. They were all waiting for each other's opinion on this. Some people were adamant that something needed to be done in response to the misconduct. Others saw no issue at all. In the end, nothing came out of this mess and I was told that another option is to report this higher up, but it would take a lot of my own time and effort and it would be stressful. I was advised, based on previous such cases, that not much comes out of this "higher-up reporting" anyway. So yeah, very inefficient.

2.8_S12) Universities tend to shield their problem researchers, as I highlighted in [redacted]. Thus the channels for reporting misconduct remain generally blocked.

2.8_R13) It is very hard to give a general answer here. A lot probably depends on how official channels are structured in a given country, institution etc. Some countries and institutions have, in my view, accessible and relatively easy-to-use channels, others don't. I'd assume that variation isn't primarily related to variation within a given channel, but rather variation across channels (i.e., they either tend to work well consistently or to fail consistently).

2.8_R14) (1) Although I'm really conflicted as I run the investigation procedures of my committee(s), I have the impression our work is well-done, well-considered and the judgements well-founded. The slowness is mostly attributable to the fact that our investigation committee consists of about ten full professors who meet physically and it is not considered feasible to have a meeting regime more often than monthly. When there's 350 pieces of evidence, this month between two meetings is well-needed.
(2) Suggestion for the April meeting, derived from the comment "it can be hard to identify institutional contacts, particularly at hospitals. Perhaps a master directory could be created?" Yes, this is a good idea. I think many countries have those master directories already: France (référents pour l'intégrité scientifique), Belgium (research integrity officers) and Germany (Ombudspeople). It could be enhanced or elaborated probably, or a European pointer to these national directories could be set up. Who should act?

2.8_R15) It varies a lot between institutions/contexts.

2.8_R16) Answer based on reporting rather than the process that occurs after reporting.
Suggested topic for discussion:
- What are the enablers and barriers to official channels for reporting misconduct? How do we create the safe

spaces necessary to enable (informal and formal) routes for discussion about potential concerns about misconduct?
- How do we set an expectation on investigation efficiency when each case is unique (complexity of case, type of project, discipline, etc.)?
- What works well from different perspectives, what doesn't, and how can these experiences be shared to produce a system that works better for everyone involved?

2.8_R17) I am really surprised to see a 'negative stem' in a multi-choice question. It's hard to understand and is pretty poor research design, especially for a study that is international and so will include respondents for whom English is not their first language. I think this is a real surprise and also a shame for such an important topic. Why not ask: Official channels for reporting misconduct work efficiently'. The answer to this question will depend on research environment and it's difficult to generalize. In my experience I think that most channels do work efficiently if there are clear ways of reporting potential misconduct, it depends what is expected though - thorough reviews or investigations take time, which they should do to ensure that the process is thorough.

2.8_R18) It is difficult to assess the efficiency of a process that is confidential and not very transparent. It also depends on the specific channel of a specific institution – the procedure can be slow and complex in general, but the specific circumstances of a specific institution could still deserve criticism.

One issue that I tend to agree with is the arbitrariness of deciding when to initiate an investigation (even in systems, where the initial investigation is not delegated to a full commission). Sometimes the threshold could be too high and cases are dismissed too easily. On the other hand, investigation should have at least some threshold in terms of providing factual evidence so that investigations wouldn't be initiated based on rumours or unsubstantiated claims.

2.8_R19) We have a published formal procedure at my university, which is routinely followed. But the length of time taken to move through the procedure can vary greatly depending on the nature of the allegation and the complexity of the case.

2.8_R20) Re: the complexity question earlier. To conduct an investigation properly, you have to do it meticulously, gather all the evidence, get all sides to put their side of the story, then evaluate all of this and come to a decision, which can be appealed. I have no issue with this. I have been investigating manager on HR cases (not on RI issues but on suspected general misconduct) and there is often a lot of material to get through and evaluate. It has to be thorough and fair. Highlighting problems on Pub peer/Twitter/blogs is fine- the author can address or deny or show how they are wrong. An investigation which can affect employment is one that needs care.

2.8_R21) Sorry but yes. Official channels prevent reporting. They feel more like a barrier than a help in the investigation.

2.8_R22) Please note that I do these investigations on behalf of the Institution so my answer is biased in light of my role. I think the issue here is a matter of perception because sanctions/penalties are not broadly advertised so most people think that nothing happened. It would be great to consider how we can report on outcomes in a way that protects confidentiality of disciplinary processes. For me this is a big challenge.

2.8_O23) formal research misconduct allegations were handled well if slowly. Not the case in the clinical realm, where serious physician misconduct is covered up.

2.8_O24) Should be open in regard to the action taken and the delays

2.8_O25) To me the main this is a clean separation between the need to clean the published record and to retract fraudulent, fatally flawed and ethically unacceptable studies on the one hand, and sorting out what exactly happened, intentionality and need for sanctions. The retraction is urgent and needs to be done very quickly. For the full investigation there is no real need to hurry. This stance implies that we should stop seeing retraction as a punishment of individuals. It's merely an act of removing pollution.

2.8_O26) I think that there is a dearth of well-functioning 'official channels' either to report wrongdoing or for whistleblower protection. However, in countries with a central office, cases are more likely to be efficiently handled.

2.8_O27) Haven't experienced reporting misconduct through official channels closely myself but one example that I was involved with peripherally found a continued inertia between journal and institution with neither taking action.

Models for addressing serious research misconduct

Item 9: In an ideal world where resources are not an issue, which is the most suitable model/system for addressing serious research misconduct?

Percentages responding 4-5 (preferred/strongly preferred)

Subitem	1_S	2_R	3_O	All
A) Self-regulation approach, where academic institutions are responsible for conducting investigations and determining sanctions when one of their staff is accused	27.8	63.6	42.9	41.8
B) National governance approach, where government regulatory agency is set up for this purpose	36.1	36.4	38.1	36.7
C) National guidelines approach; for example, UK's Committee for Research Integrity, which does not have a regulatory role, but aims to ensure all institutions work to a common framework	36.1	77.3	57.1	53.2
D) Regulatory agency independent of Government	75.0	59.1	47.6	63.3
E) International regulatory agency with stakeholders from different scientfic backgrounds, different scientific roles and different continents	55.6	36.4	33.3	44.3
F) Similar to industry: in-house quality control but accountable to state regulatory agency	44.4	40.9	52.4	45.6
G) A body similar to Health and Safety Executive that could bring criminal prosecutions for serious research misconduct.	52.8	27.3	57.1	46.8

Free text comments on item 9

Free text

2.9_S1) It is a terrifying idea to hand this over to governments --think Trump/Musk!-- but some hybrid model of self-regulation with independent outside supervision may be required unless we can get this under control.

2.9_S2) Regulations without enforcement is doomed.

The conflicts of interest are too big if countries or institutions are in control.

International guidance with the possibility of enforcement is the only way. This needs to be organized from the scientific community itself but will be extremely vulnerable for infiltration from bad actors.

2.9_S3) It is entirely inappropriate for institutions to investigate allegations and apply sanctions. Institutions are conflicted and have reasons to conceal the fact that misconduct occurred within their institution. We need national investigations / sanction to insure that similar misconduct is treated similarly irrespective of where it occurred. The same body should have the power to require that if fraud occurred, the institution should repay grants and face financial sanctions for harm resulting from the institutions inadequate supervision.

2.9_S4) It is important to acknowledge that fraudulent research has zero impact unless it is 'laundered' by publishers (and organisations that rank and validate journals, like Clarivate). These are entities that are subject to commercial law and they should be handled the same way as any company that profits from dealing in illicit or counterfeit goods (possibly consumer protection laws?). Moreover, publishing agreements are very clear that the publishers either acquire the copyright to the fraudulent work (making them the owners of the fake research), or a license to distribute the work (which should make the author legally liable for misrepresentation). To summarise, I don't think new systems are needed, rather we need to enforce the existing systems better.

2.9_S5) The comments around political pressures are important and not something that immediately came to mind for me, but are definitely valid concerns. However, surely politics is not restricted to government agencies - internal political agendas can be very strong even at the institution level.
I would partly disagree with the comment on concentrating regulatory power in one location, if it is arguing for no centralised systems or sanctions - we have ISO standards and Health & Safety regulations for very good reasons, and certainly in the case of Health & Safety there is central body sanctioning power which has had positive impact (https://theconversation.com/the-uks-health-and-safety-at-work-act-is-50-heres-how-its-changed-our-lives-235794). There is a risk to assuming institutions acting as self-regulators are going to do a better job than examples set by established systems, and I could see this extending to misconduct regulations. A model similar to the current ISO accreditation methods (institutions are empowered in their quality process design, but there is still central oversight to specified standards) may be an option.

2.9_S6) I don't know how the UK Health and Safety department works so I chose 1.

2.9_S7) Much as I think this needs an international regulatory agency, because researchers move countries and serious research misconduct affects people in other countries, I can't see this every being put into place. We don't yet have this even for medical doctors.

2.9_S8) It's not ideal that there are 7 items to be ranked and only 5 ranks.

2.9_S9) These responses will depend on which country as science and politics work so differently within different countries.

2.9_S10) Agree with 20.2

2.9_S11) None of the above will work without media exposure and freedom of information.
Top down approaches failed so far everywhere without press attention and transparency
All UK institutions listed above failed. All if them. Fraud flourishes and nobody suffers any employment consequences.

2.9_S12) I believe we need multiple levels and coordination. In an ideal world, a simple comment on pubmed or report function on a journal would be picked up by an international organization and then forwarded to national chapters who does the work, but the international organization would still follow up that something happens.

This national organization should be connected to publishers and follow up that things are retracted.

I think that the international organization should not have any real power beyond overseeing and recommending. National chapters should still make the decisions of sanctions against researchers and journals of the retractions.

This internal organization of forensic meta-science should also have a strong group of people who also do independent audits and systematic investigations into levels of issues in science.

In essence, I'm proposing something similar to WHO.

2.9_S13) Despite feeling physically sick at the thought of a regulatory agency run by the government deciding what is and isn't true in science, the current situation is even worse. Something like the FDA or MHRA is sadly required, the only good thing is perhaps most university research integrity teams could be fired so it might be a swap in the type of bureaucracy rather than expansion.

2.9_S14) I feel that a hierarchy of options is needed dependent on severity, perhaps. Similar to student complaints, you start with attempts at informal resolution, then move onto formal complaint, then appeal, then referral to the Office for the Independent Adjudicator for Higher Education. However, none of this works unless there are adequate resources and incentives to come to the 'right' conclusion, rather than the easiest conclusion (i.e., need to remove the biases inherent in the system).

2.9_R15) The evidence (or history) shows that academic institutions/Universities are too fearful of their own reputations to regulate effectively - it needs to e taken out of their hands.

2.9_R16) Many of the reactions of the first round participants aligned with what I remember as a quote from Krista Varantola (ENRIO / TENK / ALLEA / University Tampere): "Does self-regulation work? No, does not work if there is no extra-institutional control. Yes, if there is a national-level system". The respondents identify many advantages of a self-regulation system, with investigation happening under the responsibility of the institution/employer: (1) the institution can learn (systemically) from the case, and increase its research integrity matters experience; (2) it has the means to properly investigate, has control over data servers and emails and may take measures to preserve evidence; (3) investigations require local knowledge and local investigation ensures that the local context is taken well into account; (4) the employer has a responsibility anyhow to take measures, and keeping the investigation close might inform the process better. BUT it has to be complemented with the necessary checks-and-balances so institutions investigate and take measures well. Such as a national-level system (for example accepting requests for a second advice, like in Finland, Belgium and Netherlands, and to some extent some other countries).

2.9_R17) Self-regulation on at the institutions is necessary, even if some national or international coordination exists. The system cannot effectively overlook the immense diversity of different research institutions working together and on their own in different countries, in different linguistic and cultural settings, working on different research fields, belonging to different schools of thought and having diverse views on societal needs and the role of researchers within society. If there is hope for any meaningful change, then it has to happen on the grass-root level.

Central regulatory entity could have sufficient legal and sanctioning power to enforce some initial changes, but it is likely to be resisted and cause new concerns about state interference in the academic institutions that have historically enjoyed a high degree of autonomy. Of course, to some extent this type of critique merely tries to maintain the status quo, but the issue of academic freedom and autonomy is still a fundamentally important issue. If possible, self-regulation should always be preferred to state-regulation, especially in the current era where populist and authoritarian politics are gaining momentum.

Concerning the 2nd item, national governance, to some extent this can be useful, especially in a coordinating and guiding role. It could also function as a national-level contact point on issues of research integrity for all state authorities. The national governance approach could also be useful in cases where state authorities or other public bodies commission research or for cases where research is done at institutions that are not clear-cut research-institutions (administrative offices of the government or parliament, statistical and data science units of various public authorities, national archives and museums, statistics authorities etc).

The national governance approach also needs to consider the size of the country. For smaller countries, a single governance body could fulfil multiple functions that could be divided between multiple agencies in a larger country. However, if the national governance agency/body could somehow bridge the research and the public sector, this could bring about new synergies.

National guidelines approach would be good if the institutional self-regulation is in place, and it is motivated to cooperate within the national framework. This function is necessary in essence, to provide guidance and support, however it would be difficult to balance regulatory and sanctioning role with being supportive and helpful. National guidance is likely best provided by an independent national body who does not have sanctioning power over institutions that do not follow its guidance. In essence, this fits well with the self-regulation model.
The 4th item stands out of the others since it merely highlights one procedural aspect of a regulatory agency or body – that it should be independent from government. This should be true in any case, whether the national agency has merely guiding role, some coordination tasks or full regulatory role with mandate to sanction institutions.

The 5th item seems questionable at best. I believe in a stronger European wide cooperation (not limited to EU) but cooperating with regions and countries with authoritarian tendencies where the research sector is tightly controlled by the state provides nothing valuable or useful for the European research area (an EU concept but again shouldn't be limited to the EU). It would be absurd if researchers from Russian, Chinese or Saudi Arabian institutions would lead investigations against European researchers. Such a regulatory agency would have no legitimacy whatsoever and would be politicised in an instance.

The 6th item, in house quality control, is quite similar to the self-regulation model with some added national oversight. All in all, the best model would most likely include elements of self-regulation and some light national oversight. I guess this solution would be okay, however I'm not well acquainted with the inner workings of industries. There are clearly examples of industry regulation that isn't very effective, like content moderation of social media.

The last item with power to bring criminal prosecutions seems a bit frightening. I guess some specific harmful action could have criminal liability, like sharing sensitive information with malign foreign agents, harming the health or well-being of research subjects, serious mismanagement of public funds (e.g. corruption), fabrication of results with direct impact to safety, health and well-being of persons etc. But in case of plagiarism, it would be really difficult to imagine a case where criminal liability would be justified and necessary. I don't think that the concept of "research misconduct" fits well with criminal liability, even if we are focusing on the most serious forms, since the concept is (intentionally) broad and covers all sorts of unwanted practices. For conceptual clarity it would be better if a distinct concept or term was used for practices or deeds with criminal consequences – perhaps "fraud" or something similar. Also, it should be clarified whether the criminality is associated with purely research matters since researchers live and work in a society which already has numerous legal regulations in place – for instance, serious breaches of personal data could bring about criminal prosecutions, however I wouldn't call it research misconduct, even if the personal data was part of a research project, since the violation falls under data protection regulation. Similarly, there could be other criminally sanctioned activities that researchers could commit which would fall under a distinct regulation (financial book-keeping, violation of individual rights, harassment etc).

There is a tendency that "research misconduct" is used as an umbrella term for all things a researcher can do wrong – however, this unnecessarily obfuscates the issue and should be avoided. If something were criminally sanctionable, it should be utterly clear to all involved parties what is allowed and what is not, otherwise the regulation would lack legal clarity and fairness.

2.9_R18) Setting up a system to reinforce and buttress institutional reports through required peer review of institutional reports, through consortia of institutions or contracting with not-for-profit groups.

2.9_R19) This for me sounds the best: International regulatory agency with stakeholders from different backgrounds, roles and continents.
It's like a jury in court.

2.9_R20) While an international regulatory agency might seem to be a nice idea in theory, I don't see any even remotely viable pathway to make it work in practice. That's why I consider it least preferred. In an ideal world with less friction on many levels, I would be more sympathetic to the idea.

2.9_R21) As our research grows more inter-institutional, across countries and disciplines expertise becomes an issue. I wonder if an option to be explored would be that an external agency could appoint experts and also be the independent observer if needed?
With regards to criminal prosecutions: this will be a lengthy process which won't give us the agility that these investigations require to fix matters of public record and address issues or research culture. It will be costly with little return on investment. Instead, could we explore models which already exist for nurses and medical staff where 'fitness to practice' can be removed or suspended.

2.9_R22) I know why it's been done but the ranking doesn't help answer this question (you're expressing a preference per item). It seems to me you could have ranked these instead. Or changed the responses to "not at all suitable" to "very suitable" Also 2 and 3 and 4 are not exclusive.

2.9_R23) Suggested topic for discussion:
- What is the goal that is trying to be achieved by instituting a new model? What evidence needs to be gathered and analysed to enable discussions about amendments to, or amelioration of, the current system to a new model?

2.9_R24) Answering this question will depend entirely on what kind of research misconduct takes place. There are some kinds that may warrant legal processes (e.g. for defrauding investors, causing serious health harm) but others that would not reasonably warrant this. Also there are regulators in some countries that cover some types of research, but perhaps not others for good reason (as research differs). For instance the MHRA in the U.K. has an assurance and compliance role for a particular type of research.

2.9_O25) A strict centralized regulation may transform the genuine goal of fighting misconduct, in a bureaucratic task to be accomplished. Moreover, the risk of the capture of the regulator is higher in a highly concentrate environment. Last but nore least: a centralized system may exert a tyrannical control over science. Better to have many different local institutions. This may determine a less efficient fight, but it is much less dangerous.

2.9_O26) I think misconduct cases should be handled at a national rather than a local level, supported by strong national guidelines or statutory support. The local context is important when considering how to interpret allegations. Operating nationally avoids institutional conflict of interest and fears of reputational damage and ensures that standing committees can build expertise and experience. That said, it is important that a national body is independent of government (even if resourced by it) to avoid politicisation or weaponisation of cases.

2.9_O27) I agree that a more centralistic approach might lead to more consistency and severity in term of sanctioning, but I prefer self-regulation (with external quality control) because that is much better for learning and improving with a view to prevent future cases and also comes with less legalistic interference. Maybe we should work towards superinstitutional self-regulation of by a disciplinary college, like we have for doctors and nurses.

2.9_O28) Only institutions can handle this efficiently, but having uniform external standards to guide institutions and possibly provide uniform sanctions would be an asset.

Role of employers

Item 10: Prospective employers should undertake rigorous due diligence and, as far as possible, check with previous employers to ask if there have been any investigations into serious research misconduct.

Response options are mutually exclusive.
Table shows percentages selecting each option in each group.
(For personalised reports, * denotes your response).

Options	1_S	2_R	3_O	All
A) Agree regardless of outcome	50.0	22.7	19.0	34.2
B) Agree if research misconduct found	33.3	59.1	66.7	49.4
C) Neutral	11.1	13.6	14.3	12.7
D) Disagree	5.6	4.5	0.0	3.8

Free text comments on item 10

2.10_S1) If there were a national body that investigated research misconduct that body could keep a record of "findings of misconduct" against a researcher. Anyone can search the General Medical Council's website for a doctor's record to see whether he/she has any GMC misconduct findings - it gives a summary of the findings and sanctions imposed, which range from conditions imposed to removal from the register.

2.10_S2) I am really on the fence about this. I do feel that checking bits of the CV (does this paper exist? Did the person work at this company/university? Does the degree certificate look okay?) should always be done, but not a complete background check with quizzing the previous employers (unless inconsistencies show up). It is hard for the previous employer to say something anyway! HR will not know the researcher perhaps, personell has changed. When someone makes the shortlist, perhaps inquire of some people-who know people-who know people.

2.10_S3) Honestly, I don't like any of these options. An employer should undertake rigorous due diligence - full stop. But I do not agree this due diligence should be conducted solely by asking previous employers.

2.10_S4) When screen applicants' CVs, it is already clear when something is amiss. In most cases, it is much easier to exclude an application than to advocate for its inclusion (i.e. there are many more applicants than

positions). However, if the people doing the screening doesn't want to accept that something is too good to be true (or follows the same questionable practices) then nothing will come of it.

2.10_S5) I'm in two minds about this - between agree but only if upheld and agree regardless. I've seen so many cases be dismissed where poor behaviour is clearly evident. Whilst I of course want to protect those who have done nothing wrong, I also think that identification of patterns can be critical in systems that do not work to uphold misconduct.

2.10_S6) It is very difficult to decide between the two "agree" options. On one hand, the presumption of innocence is fundamental; on the other, investigators often have access to only a small part of the research process. Many investigations likely conclude without definitive proof, even when the accumulated evidence leaves little room for doubt. In the Gino case, without access to the original Qualtrics files, she might not have been found guilty of fraud, despite the absolutely overwhelming indirect evidence.

2.10_S7) In addition, applicants should be asked to certify that they have not been subject to investigations that found them "guilty". If they lie, then there is a paper trail, which makes dismissal easier. I suspect that privacy laws will make the idea of cross-institutional collaboration difficult (and for good reason).

2.10_S8) Being investigated but found not guilty should be a merit and not a reputation problem!

2.10_S9) Agree with 86.1

2.10_S10) I answered 'Agree, regardless of outcome investigation' because this is what we have to report annually for the General Medical Council.

2.10_S11) I don't think that asking previous employers about *investigations* is a good idea. In an ideal scenario, there should be a better way of finding detailed and accurate information about investigations and outcomes for each individual.

2.10_S12) Such a system should be public and transparent. Could be abused for political (or other) reasons that have nothing to do with science.

2.10_R13) It's a major problem of the current system that NDAs, or simply bad communication, do not warn employers of previous research misconduct issues.

2.10_R14) Are we saying here that, if an academic is found guilty of serious research misconduct, that they are effectively "struck off"? Because that is essentially what will happen if there is a published risk register. And I imagine that this may result in legal action being taken by the individual against the institution which carried out the investigation.

2.10_R15) Just accusations are not enough, since there can be unfounded accusations. Findings of university or employer investigations, if confirming misconduct and consequences, are relevant.

2.10_R16) The point I made in round 1 bears repeating (and I've largely stopped myself repeating!): the simple act of being told an investigation was instigated will stigmatise the potential applicant in the eyes of the employer, regardless of whether they were found innocent. (Some examples in a different context where a person is accused but actually found innocent: https://www.law.ox.ac.uk/sites/default/files/migrated/the_impact_of_being_wrongly_accused_of_abuse_hoyle_et_al_2016_15_may.pdf; https://journals.sagepub.com/doi/full/10.1177/0025802420949069; and an experimental study: https://bpspsychub.onlinelibrary.wiley.com/doi/abs/10.1111/lcrp.12018)

2.10_R17) The answer I wanted to give was not available - what I would like to see is that all institutions make part of their application forms a question that seeks to understand whether there are any ongoing investigations, whether there have been any upheld allegations of research misconduct and if what was the type of misconduct.

2.10_R18) I tend to agree with all of the comments above. I guess the main trade-off is that the more sanctions there are in place, the greater the chilling-effect for reporting potential misconduct as it is difficult on emotional/personal level to cause problems for one's colleagues. On the one hand, we want to ease up the tensions around misconduct and foster mutual trust so that researchers would be more open about questionable practices, share their experiences and try to change the practices for the better together. On the other hand, there

is the tendency for greater sanctions, publishing serious cases and tracking the employment history of researchers. The process of change should begin with open dialogue and honest discussions, followed by sanctions if the research community agrees to it and deems it necessary. If the process begins with sanctions and harsher consequences, the discussions would likely not follow.

As a side note, perhaps due the current political environment, this type of tracking has strongly negative connotations.

2.10_R19) If the outcome of the investigation has been that no research misconduct had occurred, the researcher who had been under investigation should not suffer from any negative consequences. So sharing information that investigation took place yet didn't conclusively show that misconduct had occurred would be highly problematic and could unduly stigmatize a researcher. A tricky question would be how to handle ongoing investigations, where the result is still unclear.

2.10_R20) Any due diligence would need to be in keeping with relevant privacy and data laws of the country in which conducted

2.10_R21) The question is how long should the prospective employers should check in the past? Should there be a right to be forgotten?

2.10_R22) Suggested topic for discussion:
- How do we create a system that values continuous learning but includes appropriate checks and balances?

2.10_R23) This is an important point for discussion in April. There is agreement that this has to be done (more), to stop serial fraudsters to continue hopping around as they do now. How do we action this? Can we standardize or harmonize practices? Which actors are responsible to drive the maturation of this habit (in UK / EU / globally)?
Minor remarks:
(a) When reading the comments, I read agreement that, to avoid bias, the statement from the previous employer should say only "there has been no investigation about this person for which an allegation was upheld" (aggregating "accused wrongly" and "never accused" in one category).
(b) I understand that this study is about "serious misconduct" but for this, I feel a need to broaden that scope to any deviation from standard practice an accusation was upheld. If "nothing to report" is not the case, the former employer should explicitize what the problem was exactly. A minor shortcoming could be concluded in a report 'guilty'. That is interesting for the prospective employer and might be neglected after all.

2.10_O24) Are we implying that this is done for every applicant?

Item 11: Employers, funders and publishers of research should be legally required to share information to support investigations of serious research misconduct.

Table shows percentage selecting 4-5 (agree/strongly agree)

Subitem	1_S	2_R	3_O	All
Moderately/strongly agree	88.9	81.8	100	89.9

Free text comments on item 11

Free text

2.11_S1) I believe that research misconduct should be a criminal offence with sanctions based on the harm done. So there should be compulsion for institutions to cooperate with investigations and failure to cooperate should also be a criminal offence, at least in this country. Of course, one cannot legislate for what happens in other countries, but that applies to other forms of misconduct and crimes.

2.11_S2) There could be conditions for sharing, but most countries already have access to information legislation. So, when an information request is submitted, the owner of the information should at the very least provide written justification as to why the information cannot be shared. Of course, partial data sharing should also be possible in cases where there is not consent to share potentially confidential information (e.g. blinded reviewer reports could be shared, sections of earlier versions of submitted manuscripts could be shared).

2.11_S3) While ideally, this would be the case, I can see this being greatly misused for political purposes.

2.11_S4) Agree with 86.1

2.11_S5) Another tough call. How can this be protected against being weaponized by malicious actors?

2.11_S6) I guess there is an issue with what exactly 'required to share information' means. From the comments, I guess some have interpreted this to mean public sharing. I interpreted it to mean sharing to support investigations which implies sharing information with those who are carrying out investigations. I strongly agree with the latter, but less convinced by the former.

2.11_S7) Agree, but at the cost of yet further administrative burden on universities! Thus, such reporting should be standardized, with easy-to-fill forms and minimal admin' required to comply with the duty to report.

2.11_S8) It won't work without freedom of information.

2.11_S9) Even if there are laws, they will be ignored. I admit to being curious as to how a certain case came to be, but it is really none of my business :)

2.11_R10) If research sponsors (funders, employers, more) do not feel compelled to take responsibility for the research integrity and consequences, then investigation from external actors will not have adequate conditions to investigate.

2.11_R11) A consistent legal framework would be desirable that also specifies whose investigations should be supported. Such requirements should be limited to sharing information with duly authorized investigation bodies.

2.11_R12) This is a complex area in which requirements relating to privacy and protection of individuals. Sharing of information to support investigations already takes place in some countries, but this is carefully supported by regulation and the law as well as with trust that there will not be inappropriate breaches of information. If trust in stewardship of information decreases in a nation-state then sharing of information may no longer be either possible or desirable and we also may end up with people too scared to enter a scientific career in the first place...

Free text

2.11_R13) This would be good, of course, but I'm not sure whether it can be legally required. Perhaps through agreements and contracts. For instance, with the movement to open-access publication, there is an ongoing discussion how to fund these new modes of publications. If there were public financial support for such publications, the terms could include something about cooperating with investigations.

2.11_R14) this should be a legal and moral obligation. the references should include a section to be completed by HR confirming if there had been any investigations. If they are ongoing the expected date of conclusion; if they have been completed what was the type of allegation and what was the sanction applied.

2.11_R15) making reports public would advance integrity in the system

2.11_R16) Questions to support general discussion:
- How would different parts of the sector assure themselves of their duty of care to individuals?
- How would investigations be expected to change if there was a legal requirement?
- Is the goal better information sharing? If so, what evidence is there that requiring legal sharing of information is better than encouraging the conditions that enable better communication?
- What is the appropriate role of legal practitioners in cases of research misconduct?

2.11_O17) obligations to assist investigations is different from obligations after proof of misconduct. Is there another question on this?

2.11_O18) Only for those who were proven to have committed the misconduct.

2.11_O19) As a former funder, I know the frustration of not being provided with the information necessary to conduct an investigation or not being appraised of an institutional investigation instigated by us. That said, great care needs to be taken on how shared information is handled to ensure its security.

Solutions to serious research misconduct

Item 12: Given that we have finite resources, which solutions to serious research misconduct should be prioritised in funding?

Table shows percentage rating 4-5 (i.e. effective/highly effective).

Subitem	1_S	2_R	3_O	All
A) Changing criteria for hiring/promotion/funding away from publish/perish model, so that researchers won't be motivated to commit fraud	66.7	81.8	61.9	69.6
B) Research ethics training for all researchers	19.4	72.7	33.3	38.0
C) Funding/training of research integrity officers	51.4	65.0	57.1	56.6
D) Infrastructure to collect and report on serious research misconduct nationally	66.7	54.5	66.7	63.3
E) Support for individuals/organisations who have expertise in detection of serious research misconduct	72.2	59.1	81.0	70.9

Free text comments on item 12

Free text

2.12_S1) Very hard to set a priority!

2.12_S2) My opinion on this remains the same - our current criteria and reward structure within academia needs a serious review and overhaul.

2.12_S3) How about funding NGOs to lobby institutional investors to divest from publishers that fail to act against research misconduct?

2.12_S4) All of these options are bad. Here we go with "publish/perish" again. RESEARCHERS ARE NOT AT RISK OF PERISHING. Don't waste any more money on training. Don't waste any more money on "collecting data" which is a favourite solution of all scientists that rarely achieves anything (apart from leading to calls to collect more data). The only option that seems (possibly) reasonable here is support for individuals who have expertise in detection of serious research misconduct, but I don't agree with it fully. Everyone should be able to read a paper critically and evaluate the ethical and scientific conduct of the study, it's not really a special skill.

2.12_S5) RI training only makes sense for PhD students. Not professors.

2.12_S6) I wouldn't dismiss training altogether, espeically when the harms to the research community are foregrounded -- even people who want to be famous may think twice if they are being told how much misconduct can undermine public trust in science and can indirectly lead to evidence-based policy making being abandoned in favour of ideology. Maybe my remaining shred of faith in human nature is misplaced, but perhaps some people can still be shamed.

2.12_S7) Funding for the work and legal protection of sleuths would make a real difference much faster than the other options. It doesn't require a culture change or big reforms on the level of instutitions. It doesn't require spending time on the development and delivery of training since the sleuths are already highly specialised and experienced.

2.12_S8) there may be even paradoxical effects by ethics training (teaching how to cheat best...) https://onlinelibrary.wiley.com/doi/full/10.1002/pits.23366

see also https://www.kennesaw.edu/coles/research/docs/fall-2024/fall-24-09.pdf

2.12_S9) I would fund an independent national organisation to investigate misconduct. Do not waste money by funding cosmetic measures within academic institutions.

2.12_R10) None of these things will curtail misconduct in "high-offending" jurisdictions nor shut down such bodies as paper mills

2.12_R11) In general, I support efforts directed at fostering good practices and rated these higher. However, since the question was about effectiveness, I'm unsure if this is the most effective solution, as it likely takes quite a long time. Therefore, we should have appropriate expectations as changing the culture is a slow process. However, even if directed cultural change (since culture is changing all the time even if undirected) cannot be considered effective, it is still what is needed or desired. We shouldn't stop striving towards this goal even if the efforts don't show immediate results.

2.12_R12) Suggested topics for discussion:
- How do we support good practice/responsible practice throughout a person's career?
- Working with finite resources, how do we support multiple complementary solutions?

2.12_R13) The publish of perish argument is not what I see as part of the investigations I have been assisting with; it is often about behaviours, lack of respect for students and failure to recognise contributions combined with arrogance around interpretation of data.

Free text

2.12_R14) Given the current financial situation in the UK Higher Education sector, consideration needs to be given to available resources and potential shared solutions.

2.12_R15) In many countries researchers do receive research integrity training as part of their education and the supervision that they receive, it is probably just not called 'research integrity training'

2.12_R16) All are needed to work together.

2.12_O17) The stakeholder with no shortage of funds are the publishers. I believe that they shoul spend a large part of their profit margins of up to 40% of offering value for money by investing in better prevention of acceptance of fraudulent, fatally flawed and ethically unacceptable manuscripts and in cleaning the published record by retraction when needed.

2.12_O18) I think that in addition to research integrity training for all researchers, supervisors and mentors require training on how to be positive role models, and researchers need appropriate methodological training. Research Integrity Officers are a critical resource in an institution, so should also be prioritised. Changing the assessment system will have benefits in the longer term but will take time to effect since it will require everyone to jump together. However, its ultimate impact may be significant in reducing misconduct.

Role of publishers

Item 13: Publishers and their journal editors are responsible for ensuring the literature is decontaminated from erroneous work promptly.

Table shows percentage rating 4-5 (i.e. agree/strongly agree) with the subitem.

Subitem	1_S	2_R	3_O	All
A) It is not the responsibility of publishers or journal editors to determine whether serious research misconduct has occurred, but they are responsible for ensuring the literature is decontaminated from erroneous work promptly	19.4	31.8	23.8	24.1
B) Articles that contain serious errors that undermine confidence in the findings should be retracted promptly, without waiting for an institutional investigation	80.6	54.5	66.7	69.6
C) Publishers and institutions should work together to facilitate sharing of key information when serious research misconduct is suspected	94.4	86.4	90.5	91.1
D) If conditions for retraction are not met, an expression of concern may be added to an article while an institution conducts an investigation	83.3	71.4	52.4	71.8
E) When an institutional investigation is completed, the institution should directly approach the publisher of articles affected by severe research misconduct and request retraction	97.2	90.9	100	96.2
F) When a publisher finds the same author repeatedly flagged for erroneous material, they should communicate this to research integrity officer at the author's institution	80.6	95.5	90.5	87.3
G) When a publisher or institution finds the same researcher repeatedly flagged for erroneous material, their name should be added to a database	52.8	40.9	57.1	50.6

Free text comments on item 13

Free text

2.13_S1) Journals (high impact) should also stop sending for review manuscripts from high profile authors from major research centers if these researchers have a clear history of problematic data.

2.13_S2) The problem with expressions of concern is that in some cases they don't mean "Please consider this research unreliably provisionally, and we will give a definitive retract/keep response within 6 months". Too often they mean "We know this paper is garbage but we are too chickenshit to retract it". I know of expressions of concern that are over 10 years old.

2.13_S3) Problem: what to do about "researchers" who are not affiliated with an institution, but work from their basements with a shingle out "Institute for Underwater Basketweaving"? Writing them about themselves will be ineffectual.

2.13_S4) If publishers did not feel the pressure to do all of the above, there would be a serious lack of quality control.

2.13_S5) Regarding the last point, I don't think it is necessary to have a single database. Having a publisher-level database would already be a major improvement. For example, repeated fraud in an Elsevier journal should see the author blacklisted across all journals by Elsevier. An alternative would be a system at the level of submission handling software (the 2 main ones are "manuscript central" and "editorial manager", and I am almost certain that Clarivate and RELX, respectively, already have a consolidated author/reviewer/editor/journals databases)

2.13_S6) The comment on security of the database reinforces my opinion that it would be a poor idea to enforce this kind of initiative.

2.13_S7) When a publisher finds the same author repeatedly flagged for erroneous material...it should be communicated but not sure to whom at this point.

2.13_S8) It is pointless to teach morals to businesses which thrive on vice.
Tobacco, alcohol, scholarly publishing....

2.13_S9) As an editor, I have strong opinions about this. Journals and publishers should absolutely not investigate misconduct and retractions should not be seen as a punishment. Here only the veracity of the scientific record matters.

Journals should be passive agents that are highly cooperative to others who conduct the investigations.

Journals should definitely publish forensic meta-science that in pursuit of correcting the scientific record may uncover scientific misconduct. However, as scientific misconduct varies across countries, keeping track of it isn't feasible.

In an ideal world, journals would simply flag papers through retraction or concerns and it would be discovered by the right agencies through eg OpenAlex

2.13_S10) Cannot retracted before an official investigation; this is guilty until proven innocent

2.13_S11) At present determining whether there is serious research misconduct is everybody's responsibility. Sometimes it will be apparent to editors, sometimes to institutions and colleagues, sometimes to others working in the specialty. We should not abdicate responsibility to everyone other than ourselves.

2.13_R12) The principle of innocent until proved guilty should be embedded in processes.

2.13_R13) Databases of names present huge ethical challenges, I have no confidence that this could be done well

2.13_R14) Double neg in 1 might pose a bit of a problem with data collection

2.13_R15) Again, regarding the database, should there be a right to be forgotten?

2.13_R16) Concerning the 1st statement, I don't think that is the main or sole responsibility of the publishers to identify misconduct. However, they should have procedures in place to facilitate detection, reporting, investigation and rectification of misconduct.

The second statement: in general, a factual error doesn't need to be investigated by a body, since it can be simply proven to be correct or not. Investigation attempts to establish factual basis to assess whether the erroneous conduct could or should be considered misconduct and whether the researcher is responsible (perhaps it was an honest mistake). In a similar way, if an author asks to rectify a mistake in a publication, it shouldn't mean that an investigation into potential misconduct should be initiated. There should be room for error checking and correcting outside of misconduct procedures. Making errors is not misconduct, it is quite human to make mistakes and err.

The third statement: agree. Sharing key information seems like basic cooperation.

The fourth statement: I'm not sure what would be the benefit of such a concern. I were to read such a publication, what should I do then – disregard the article or still consider its usefulness? However, such a notice could be useful if the publisher is reluctant to redact the paper but still wants to highlight some issues or concerns. However, it could have an opposite effect by diluting the efforts against misconduct and unethical research, by providing a more lenient way to react to violations.

For instance, last year The Journal of Heart and Lung Transplantation (JHLT) did not retract a paper that was based on research that transplanted organs procured from prisoners in China. This type of research violated the journal's ethics policy, but nonetheless the paper wasn't retracted.

Free text

See: Retraction Watch (2024) Journal won't retract paper that involved human organ transplants in China. URL: https://retractionwatch.com/2024/12/20/journal-wont-retract-paper-that-involved-human-organ-transplants-in-china/

Fifth statement: agree. It is not too much to ask, especially if the misconduct was proven.

Sixth statement: agree. Repeated action indicates some issues or concerns. Such a communication would be well reasoned and based on factual evidence.

The last statement about the database is an interesting idea, but difficult to implement. As one of the comments suggests, if this is merely an internal database (essentially a blacklist) then it is fine, but it lacks a wider impact. It would also mean that each publisher should create a separate database for their own internal use. The problems arise, when such databases were shared, and decisions were made based on this combination of data. There is a risk that publishers would start doing background checks or assigning trustworthiness scores or like potential authors, based on their own data, which in turn starts influencing their decisions whether to accept manuscripts. Also, research is rarely an individual pursuit nowadays, therefore one author with low trust score could impact the whole team of co-authors who might have done nothing wrong. Moreover, if such trust-scores were calculated, it would most likely be delegated to some automated AI-based system, which could raise further concerns.

2.13_R17) Not clear to me what 'flagged' means in this context. If it means that their institution has concluded that research misconduct related to specific projects or project is confirmed, then yes. But simply being accused of misconduct where no university or employer investigation has confirmed this, is not enough for a 'misconduct' database. I believe that a 'suspected misconduct' database would be challenged by individuals who were named there as libelous.

2.13_R18) Suggested topics for discussion:
- How do we strengthen our duty to maintain a trustworthy research record?
- Should we disaggregate concerns about serious research misconduct from discussions about a trustworthy research record?

2.13_R19) can publishers make use of the information collected in Argos https://www.scitility.com/argos where authors and papers have a rating about the risk of retraction?

2.13_O20) I suspect the legal issues for publishers varies by country.

2.13_O21) This ultimately protects the research record, so prompt retraction is key. I agree with one of the comments that expressions of interest can be damaging, especially if the allegation of serious misconduct is not upheld. Once that expression of interest appears on the paper, it is very difficult to row back. However, more communication between the publishers and the institutional research integrity officer might help to expedite an investigation and retraction if an allegation is upheld.

2.13_O22) I believe the statement 'It is NOT the responsibility of publishers or journal editors to determine whether serious research misconduct has occurred' should be reconsidered. I'm unsure how a publisher could assess, based solely on a flawed article, whether the errors result from serious research misconduct or not.

2.13_O23) As for the last point: who is the owner of the database? A pubpeer-like solution is the best that can be done for avoiding a centralized big-brother of science.

Whistleblowers and bystanders

Item 14: Please rate your agreement with the following statements about whistleblowers from 1 = strongly disagree to 5 = strongly agree

Table shows percentage rating 4-5 (agree/strongly agree).

Subitem	1_S	2_R	3_O	All
A) There are disincentives for researchers to report serious research misconduct	86.1	63.6	61.9	73.4
B) Usually there is insufficient protection for whistleblowers who report serious research misconduct	86.1	63.6	76.2	77.2
C) Whistleblowers should have their identities protected, with confidential channels for reporting suspected serious research misconduct	86.1	72.7	71.4	78.5
D) It is important to be aware of and mitigate collateral damage that may be caused to other members of a research group if one member is found to have committed serious research misconduct	72.2	81.8	85.7	78.5

Free text comments on item 14

Free text

2.14_S1) "Whistleblowers should have their identities protected" - I agree up to a point. There has to be some consideration that a whistleblower may not be operating in good faith, and I think the person suspected of committing research misconduct needs to have the ability to robustly defend themselves. The criminal defense system has walked this tightrope for many years - protecting both the rights of the accused and the rights of the accuser... and it doesn't always work.

2.14_S2) People should stop signing as authors on papers containing data they didn't collect, analysed in ways they dont understand. Go and check on what your colleagues are doing and how they do it before you join them on a paper.

2.14_S3) I think the idea of protecting other members of a lab is crucial.

2.14_S4) It is important to mitigate collateral damage, of course. The important question is "how?". The answer to that question cannot be "by brushing things under the carpet" (an answer which, in more diplomatic terms, is often the one given to that question).

2.14_S5) On bystanders and collateral damage: it is important to mitigate impact, but also to assess who might have been complicit. Those breaching research integrity are mostly not lone actors, and it is important to determine wider responsibility. This is also to address the responsibility of reporting - as per the comment of 70.1, policies often indicate a responsibility to report, yet often misconduct where it concerns others is not addressed to avoid making it 'their problem', even if a policy indicates directly that it very much is the problem of anyone with knowledge of the behaviour.

2.14_S6) Natural justice requires that those accused know who accused them. If people do not want to suffer collateral damage, they should blow the whistle on the misconduct.

2.14_S7) The comment on vexatious accusations is useful, and highlights the trade off between whistleblower protection and abuse of a system.
A clear outline on how other members of a research group should be approached, managed, and supported during investigations would be helpful, and is not something I have seen in my own institution's policies.

2.14_R8) The number of times I have heard "I don't want to rock the boat"...

2.14_R9) It is extremely difficult to deal with anonymous allegations, as the motivations of the Complainant have to be considered as part of the initial assessment.

2.14_R10) Reporting and investigating such things can be a very messy business.

2.14_R11) Please note that whistleblowers are only protected within their own institution. If someone wants to make an allegation of misconduct via an institution that is not there own they do not have the same protections as if they were whistleblowing against their own employer - this can then leave whistleblowers really expose to legal challenge should the researcher at that institution decides to sue them for defamation

Free text

2.14_R12) Tend to agree with most statements. It is a matter of finding a workable solution. In principle, whistleblowers are necessary, and they must be protected from retaliations, both legal and employment related. There is a sad tendency that individual whistleblowers are accused of slander or otherwise forced to silence, even if serious matters were brought to light by whistleblowers.

In a broader perspective, it is more likely that researchers and academics need protection as whistleblowers when reporting misconduct of other institutions, especially public authorities or businesses. A recent report "A 2024 Report on SLAPPs in Europe: Mapping Trends and Cases" (2024) has highlighted the number of legal action (Strategic Lawsuits Against Public Participation – SLAPP) against whistleblowers has been growing in recent years. See: https://globalfreedomofexpression.columbia.edu/wp-content/uploads/2024/12/CASE-2024-report.pdf

Also, ENRIO has published a handbook which specifically addresses the issue of whistle blower protection in research setting in light of the EU whistleblower protection regulations.

See: European Network of Research Integrity Offices (ENRIO). (2023). ENRIO Handbook on Whistleblower Protection in Research. Zenodo. https://doi.org/10.5281/zenodo.8192478

All in all, it seems that the issue of whistleblower protection within research should be somehow merged with the wider move towards providing sufficient protection to whistleblowers, as there could be various types of violations in various settings.

When serious research misconduct is confirmed

Item 15: Which of these practices should be options for institutions when serious research misconduct is confirmed?

Table shows percentages responding 4-5 (agree/strongly agree)

Subitem	1_S	2_R	3_O	All
A) Educational retraining for researchers who have been found to commit serious research misconduct	33.3	86.4	52.4	53.2
B) Restorative justice approaches; e.g. requirement to meet those affected by the misconduct to discuss its impact	38.9	63.6	52.4	49.4
C) Sanctions such as demotion or dismissal	91.7	72.7	81.0	83.5
D) Report on the investigation made public, with identities of those found to have committed serious research misconduct disclosed	86.1	63.6	71.4	75.9

Free text comments on item 15

Free text

2.15_S1) Can people be reformed who have intentionally commited academic misconduct?

2.15_S2) Agree with 68.1 on the publication of all investigations, including those dismissed.

2.15_S3) This seems like a case-by-case basis is required. Completely removing demotion/dismissal sanctions does remove the 'concrete' penalty, although reputational damage risk is still high. However, this would depend on the researcher's position and how it impacts those around them - if they have been found to be dishonest in research practices, is it fair to others to leave them in a position of power over junior researchers, signing off on critical decisions in research projects, and have them leading on collaborative teams?

2.15_S4) I really don't think educational retraining would help. The misconduct does not happen because individuals are not well trained. They may be in fact very well trained in all aspects - research method, writing publications, research ethics, team management, science communication. It may be the excellent skills that enable them to spot opportunities for misconduct and ensuring that it's unlikely to be spotted/reported.
I am open to the idea of restorative justice although I am skeptical. I don't know if I believe that the perpetrator would be able fully grasp the impact of their actions and would not feel responsible.

2.15_S5) Research misconduct is workplace fraud, and should be handled as such.

2.15_S6) It is too late to retrain people who publish fraud, they know what they are doing. Retraining could happen if you were caught faking data in an undergraduate report. One strike and you're out for published data. Either these people know what they're doing is wrong (so retraining will never work), or they are utterly stupid and unsuitable to be researchers in the first place.

2.15_S7) If the misconduct is serious, should education really be an option? Is there any evidence that it works (for those previously found to have committed serious misconduct - do they ever go back into research again)?

2.15_S8) All of these are options, but the one chosen should depend on the severity of the misconduct and mitigation. Usually the approach is to protect senior individuals who commit serious misconduct when it is clear they know they have done wrong and to sack junior individuals who might have less insight.

2.15_S9) "requirement to meet those affected by the misconduct to discuss its impact" - I have no idea how that would work.

2.15_S10) I abhor punishment as a means of human interaction. Sadly, the world is as it is, and I believe that research misconduct must have serious consequences including dismissal and public shaming.

2.15_S11) We are currently in a world full of people who have committed serious research misconduct who continue to hold prestigious positions that allow such behaviour to continue. If all procedures are followed (investigation, appeal, legal routes, etc.) and it remains clear that serious misconduct has been committed (and referring back to the definition that this was deliberate misconduct), then this should be made public.

2.15_S12) In general, in many of those cases, part of the evidence and part of the "crime" are public: erroneous or fraudulent publications. Therefore, some degree of publicity is unavoidable if one accepts that correcting the scientific record is paramount and that transparency in science is important. The question then becomes what do we put in place around and in addition to that process of correction of the scientific record, and for what other purposes.

2.15_R13) GDPR considerations needed here.

2.15_R14) A public report would be problematic in some cases. For example we currently have a complaint where a public report naming the respondent and setting out the circumstances of the misconduct would make it very easy to identify the complainant, who wishes to remain anonymous.

2.15_R15) My personal feeling is that serious scientific misconduct (confirmed) by an individual is then incompatible with continued/future employment in a position of public trust. I base this on a belief that engaging in scientific misconduct is about a personal set of values and moral compass, which is not something that is reliably changed by simple 'retraining' or counseling.

2.15_R16) - I very much like the comment of Round 1 respondent "1_1_S) Deliberate serious research misconduct should be a firing offense. No ifs and buts." and "If [..] then dismissal is the only feasible option." If it's indeed deliberate, and serious as defined in the preamble of this Delphi study, it is hard to justify not firing the perpetrator, in the light of the abundance of excellent young scientists ready, qualified and fit to take his(her) place.
- Through the comments, I read agreement that "name and shame" has a large effect, but some think that makes it advisable, others think that just makes it inappropriate by design. I think naming and shaming is justified at least for gross perpetrators (as is done in the media).
- There are many comments with bad experiences or drawbacks to restorative justice. They seem to make sense. It is evident that this approach is useless (and even harmful/painful) for the ego's who don't recognize their mistake. But the question is framed that these "should be options for institutions" and I don't exclude that in some cases it could make sense for its healing potential. Probably a minority of cases. This response was also an eye-opener to me, making clear that institutions need to consider well before trying restorative approaches: " One thing that often happens in my experience is that it is tempting for institutions to misconstrue cases of misconduct as conflict between people. I would be worried of making this easier... "

2.15_R17) Institutions need to be encourged to prove how they have detected and addressed such behaviours, and celebrate success in this area rather than be terrified about their reputation. It's a good thing to detect misconduct!

2.15_R18) Consequences and reporting/justice will depend on country, field of research and likely impact. There have been some discussion showing that the mental health strain of the worry about having been found to have carried out 'research misconduct' can be severe. I am concerned that there may have been (unreported) suicides or serious mental health damage to those accused of research misconduct that would not constitute criminality. Might it be good to carry out a study of the mental health impacts of allegations of misconduct and upheld allegations (where no harm was caused to the public by the misconduct and where no criminality occurred)?

2.15_R19) Suggested topics for discussion:
- If the minimum standards of expected behaviour are not met, what should happen? Is the minimum standard the principles of research integrity or do institutions as autonomous employers set their own expectations?
- As employers are autonomous, how do we build a framework for consistent responding to cases?

2.15_R20) It is very case dependant. Sometimes, when the harm is great, there is no alternative to just dismissing the researcher. Re-education seems like a good idea, but if the researcher is a top expert in a very specific field, there may not be anyone suitable for "retraining" if the matters relate to very specific methodologies, mechanisms

or instruments. For instance, in case of plagiarism, it is unlikely that the researcher didn't know how to cite sources, but rather an intentional choice to omit some information.

2.15_R21) another option I would like to explore would be suspension from supervising students or line managing PDRAs; then the issue is if someone is employed on a research and teaching contract and we stop them from being able to do parts of their role do we then enter constructive dismissal territory?

2.15_O22) But where do you make it public: a) institution newsletter; b) local/national newspapers; c) journal(s) where it was published? Or all of possible venues?

2.15_O23) I stick with my first answer: It depends on the severity of the misconduct and whether it qualifies as a crime. Not every crime is disclosed to the public, and even criminals have a path toward reform or redemption. It is crucial to analyze each case individually and to understand the context that enabled the misconduct to occur.

2.15_O24) I do not think educational retraining is appropriate for serious misconduct - when it is intentional, this does not seem something that is amenable to re-training. To me it means the perpetrator loses the privilege of working in academia

2.15_O25) Institutions need to be able to sanction anyone found guilty of serious misconduct to protect other researchers and, as a possible byproduct, disincentivise others from taking the same course. Where is person is not dismissed, retraining would be essential. The application of restorative justice would very much depend on the nature of the misconduct and who was impacted and should be considered on a case-by-case basis.

Unintended consequences/barriers to progress

Item 16: Please rate your agreement with the following statements about unintended consequences/barriers to progress

Percentage rating 4-5 (agree/strongly agree)

Subitem	1_S	2_R	3_O	All
A) Fear of reputational harm makes institutions less likely to take action on serious research misconduct	91.7	59.1	71.4	77.2
B) Investigations of serious research misconduct divert researchers and associated resources from more productive research work	27.8	31.8	23.8	27.8
C) There is a danger that structures developed to investigate serious research misconduct could be weaponised by those with political agendas - e.g. on topics such as vaccination, climate change, sexual health.	50.0	45.5	52.4	49.4
D) Failure to address serious research misconduct at the institutional/employer level could lead to more bureaucracy from external agencies	69.4	52.4	61.9	62.8

Free text comments on item 16

Free text

2.16_S1) My experience with research misconduct fell within a politically/socially sensitive topic, where not acting with integrity severely undermines this sensitive topic. However, instead of choosing integrity, this sensitivity likely led to a much stronger drive of the institutions and scientists involved to hide, deny, dismiss the misconduct on any possible grounds they could find. As such, it heightened the conflict of interest, and lead to further breaches of integrity by persons higher up in the administrative hierarchy of the institutions involved.

2.16_S2) "There is a danger that structures developed to investigate serious research misconduct could be weaponised by those with political agendas - e.g. on topics such as vaccination, climate change, sexual health." We have already seen this in practice. The problem is created, however, by those who engage in misconduct or refuse to confront it appropriately.

2.16_S3) There is also power bias in institutional investigations of misconduct

2.16_S4) Regarding weaponization - the current political climate in the US shows that politicians do not "need" misconduct to defund and dismantle the scientific infrastructure. I suppose it's a good idea to not give them more ammunition, but would it really make a difference? If they don't like science, finding out that a tiny fraction of it might be fake isn't going to change much.

2.16_S5) See what RFK said at his hearing... https://x.com/cremieuxrecueil/status/1884665186797191273

- 20% of science funding should be for replication studies
- Peer reviews should always be published alongside papers
- Cargo cults must be ended and fraudulent celebrity scientists crushed

Frankly we should all be embarrassed that the most anti-science person in the world has got this right, and apparently nobody else in the public eye has had the courage to say it.

2.16_S6) Another problem are networks, because science is a village.
Whitewashing a fraudster pays off not just in money saved but also in money gained, from friendly grant reviews.

2.16_R7) One thing that we have to look at too is that doing good research takes more time than doing sloppy research. The work allocation models need to be revisited and time needs to be given to researchers to work properly with the due care and attention the job requires.

2.16_R8) Great and interesting comments from the Round 1 Participants. This was one of the most pleasant comment sections to read :-)
- Indeed, cross-checking and investigating each other, and correcting the literature is ultimately productive work!
- Failure to address misconduct properly by the institutions indeed risks increased control by external agencies, delivered to the will of national politics. It is in research's best interest to properly self-regulate.

2.16_R9) I would say that my university considers that not taking action to address research misconduct will result in MORE reputational harm than addressing the situation head on.

2.16_R10) Concerning weaponization of investigations to attack research groups focused on subjects that political agendas want to stamp out, one wants to believe in academic freedom in the universities (to study subjects that matter to the general population). But there is no doubt that public funders and funding strategies (and official/public 'watchdog' activies') have their priorities given to them by politicians.

2.16_R11) The danger of weaponization is real, yet it can be mitigated by adequate governance structures with sufficient resources.

2.16_R12) All the comments make some good points.

Concerning the 1st item, I believe that reputational harm could also be great when no actions are taken, unless the institution could somehow ensure that no one would ever find out. In some countries, potential violations "leak" to journalists easily and a public scandal can be even more harmful to reputations.

Free text
I believe that the political weaponisation is now even more likely, especially considering the event in the US context. I really hope that this won't happen, as this would be detrimental to all the effort put into misconduct prevention. 2.16_O13) While these unintended consequences are possible, some are less important barriers. For example, the diversion of resources to investigate a case is a given for those on the investigative committee but is a necessary evil. Where serious misconduct happens in an institution, my observation is that they are more likely to want to demonstrate that they take this seriously - a lack of action would do more damage to their reputation in the long run. There is also always a danger that misconduct investigations can be hijacked by those with political agendas. However, I don't think this is a serious barrier to progress if processes are clear, fair and expedient, and the principle of no detriment is applied rigorously. 2.16_O14) the time required to investigate a claim is onerous for the committee, but there is no way around this. 2.16_O15) Investigations inevitably require resources and come with associated costs. Therefore, it is crucial to design a newly established system that is efficient, purpose-driven, and demonstrably cost-effective—ensuring it offsets expenses by enhancing the quality and integrity of research. Additionally, while there is a risk that allegations of research misconduct could be misused, the existence of such misconduct has already contributed to the spread of misinformation

Item 17: How interested would you be in having discussion of the following topics at the in-person meeting in April?

Percentage rating 4-5 (interested/strongly interested)

N.B. We plan parallel discussion sessions, so a topic does not need strong level of interest from everyone to be included.

Subitem	1_S	2_R	3_O	All
A) 1. Can we specify a study design that would provide better estimates of prevalence of research fraud?	41.7	20.0	52.4	39.0
B) 2. What should institutions consider when looking at costs and benefits of misconduct investigations?	16.7	38.1	52.4	32.1
C) 3. Getting ahead of the problem: the role of AI in research fraud	41.7	66.7	70.0	55.8
D) 4. Steps towards a universal approach to investigations of research misconduct	69.4	76.2	81.0	74.4
E) 5. Whose responsibility is it to organise/pay for research integrity investigations?	44.4	38.1	35.0	40.3
F) 6. Why do they do it? Explanations for research misconduct and implications for solutions	41.7	61.9	47.6	48.7
G) 7. How best to defend against weaponisation of research for political/pseudoscientific objectives.	33.3	61.9	71.4	51.3
H) 8. How to design post-publication peer review to accentuate the benefits and protect against weaponisation	61.1	52.4	57.1	57.7
I) 9. Are there "off the shelf" procedures for investigating research misconduct that have been developed by one country and could be extended to others?	50.0	61.9	47.6	52.6
J) 10. Whose responsibility is it to ensure procedures for research misconduct investigations are followed?	47.2	52.4	38.1	46.2
K) 11. Is it possible to reconcile legal requirements for privacy with need for transparency in research misconduct investigations?	42.9	71.4	38.1	49.4
L) 12. How can we move from "publish or perish" culture? Is open research part of the answer?	63.9	68.2	71.4	67.1
M) 13. Could we achieve a common international framework for collecting accurate data on rates of research misconduct? What would be the benefits?	57.1	33.3	47.6	48.1
N) 14. Is a publishers' database of "repeat offenders" feasible and/or desirable?	50.0	38.1	33.3	42.3
O) 15. What should be the conditions for retracting a paper? How should publishers use other options, such as Expression of Concern, or Investigation Pending?	66.7	61.9	50.0	61.0
P) 16. What policies can we develop for mitigating collateral damage caused to other members of a research group and/or collaborators who get caught up when a colleague is found to have committed serious research misconduct?	36.1	61.9	47.6	46.2
Q) 17. Can we agree on definitions of key terminology, like research culture, integrity, ethics, misconduct, governance, open research	30.6	54.5	38.1	39.2

Subitem	1_S	2_R	3_O	All
R) 18. Should the law be involved in cases of serious research misconduct, and if so how?	47.2	50.0	20.0	41.0
S) 19. What methods are effective for detecting serious research misconduct?	72.2	77.3	81.0	75.9
T) 20. What can research funders do to prevent and/or address serious research misconduct?	63.9	42.9	38.1	51.3

Free text comments on item 17

Free text

2.17_S1) Can we develop standardised investigation protocols that can be followed by anyone to isolate cases of research fraud (Bellingcat's guides to community journalism could serve as inspiration: https://www.bellingcat.com/category/resources/). I envision a 'funnel' system with easy-to-check criteria (to quickly weed out the majority of cases), that get incrementally more thorough once the burden of evidence becomes more important. We already have some tools (e.g., the problematic paper screener), but we can do a better job of removing the individual 'sleuth' from the investigation (i.e. the criteria in the protocol should be generalisable to allow for independent validation)

2.17_S2) 15 is a great topic, but we'd need sufficient people from publishers there to discuss.

2.17_S3) #17 Should be removed. There are already definitions, and they are clear. No need to reinvent the wheel.

2.17_S4) Weaponization of research misconduct is going to be a massive problem that will shake the foundations of science in the nearby future. Organizing a way to deal with research misconduct is going to be paramount in protecting researchers all over the world while eliminating bad actors.

2.17_R5) Drummond Rennie, many years ago, proposed a structure for random data audits for determining the prevalence of misrepresented data. The group might go back and review that.

2.17_R6) - The need to support (financially and legally) or even employ sleuths as research detectives is worth exploring further. Would that be the role of a charity or of the organized scientific community — and if so: which institution(s) exactly?
- For your interest, ENRIO will (probably later this year, 2025) publish an extensive report on key definitions in research integrity / ethics / misconduct. It is the result of many years of work, including a query in high level offices in almost all European countries.
- While "research misconduct" (in the sense that professional researchers breach deontology / professional principles and rules agreed upon by the scientific community) is quite stable, there is an enormous rise in "research criminality" (actions by criminal organisations outside the professional research community, with the goal of making money by exploiting weaknesses in scientific publishing: paper mills, predatory journals, fake papers with real authors who are unaware of the publication ...). I think the law is not so relevant for research misconduct, but it definitely is for research criminality. If we want to stop these practices, which laws/rules are they exactly breaking, and who is responsible for policing them?
- Re 20: In September 2025, a priority setting exercise will probably be held by Science Europe and ENRIO, to determine a proirities agenda for the European research system in tackling misconduct and improving integrity.

2.17_R7) 1. Ethics committee approvals – are they not excessive? (Why and from whom does a person need approval if he/she conducts a survey about general opinions for scientific research, assuming the person is not affiliated with a scientific institution? Assuming the survey in different countries).
2. Publications based on a bachelor's or master's thesis (issues of self-plagiarism, percentage of text similarity, amount of 'new material,' and other considerations).

2.17_R8) The use of AI tools is an interesting topic, as they are being used more and more to "identify" research misconduct. But how reliable are these tools, and should the results be used in isolation or should additional supporting evidence be required?

Free text

2.17_R9) How can UKRI or DBIS take the lead on this? (a v UK-centric q)

2.17_O10) Item 3. "What is the role of AI in research fraud?" -> not clear if this means in causing research fraud, preventing it, or both?
Relatedly - would be nice/interesting to have a general topic on identifying current gaps into automated tools for error detection (both AI- and non-AI-based). For someone like me, who has the capacity and skills to build tools to benefit researchers, it would be beneficial to have a context where we can figure out what are the missing tools that would be most helpful to researchers.
I rated some items as less interesting to discuss (e.g., 14. Is a publishers' database of "repeat offenders" feasible and/or desirable?) because the phrasing is not particularly interesting (yes, I think it's feasible and desireable - but the bigger question is would it be palatable and legal?). So this topic is interesting to me, but in terms of the more complex questions than the more basic features [also: if it is not desireable to some, then there isn't much further to discuss].