Research Integrity: Guidelines for Scientific Conduct

1. PURPOSE AND SCOPE

Cancer Research UK (**CRUK**) is committed to its mission of bringing forward the day when all cancers are cured. CRUK expects the research it supports to be conducted according to the highest standards of research practice to ensure the integrity and reliability of the research and outputs.

These Guidelines set out how researchers and organisations who receive CRUK-funding can support research integrity. CRUK strongly encourages all Host Institutions to adopt these measures, and in particular, expects the CRUK Institutes (as defined in para 4.2) to be at the forefront of implementing the steps, standards and practices outlined in Section 3.

These Guidelines should be read in conjunction with the *Research Integrity* section of Cancer Research UK's *Grant Conditions.*

2. SCIENTIFIC MISCONDUCT

For the purposes of these Guidelines, **Scientific Misconduct** means fabrication, falsification, plagiarism, misrepresentation, mismanagement or inadequate preservation of data and/or related materials, breach of duty of care or improper dealing with allegations of misconduct. These concepts are further defined in section 4.

3. GUIDANCE FOR MITIGATING THE RISK OF SCIENTIFIC MISCONDUCT

Researchers and institutions should consider implementing the recommendations set out below to mitigate the risk of scientific misconduct.

3.1. The *Concordat to Support Research Integrity*

3.1.1. CRUK supports of Universities UK's *Concordat to Support Research Integrity* (the *Concordat*), and is committed to the following five principles:

- Maintaining the highest standards of rigour and integrity in all aspects of research; both the research itself and any resulting publications.
- Ensuring that research is conducted according to appropriate ethical, legal and professional frameworks, obligations and standards.
- Supporting a research environment that is underpinned by a culture of integrity and based on good governance, best practice and support for the development of researchers.
- Using transparent, robust and fair processes to deal with allegations of research misconduct should they arise.
- Working together to strengthen the integrity of research and to reviewing progress regularly and openly.

3.2. Inclusion of research integrity principles in inductions and staff development opportunities

3.2.1. Staff and student induction sessions are a good opportunity for institutions to instill the tenets of the Concordat. All new research staff and visiting researchers should be encouraged to attend induction sessions on research integrity and an introduction to the policies outlined in Section 3.5.

3.2.2. Effective people management is key to fostering a culture of research integrity. All group leaders should be given the opportunity to improve/refresh their management skills through formal and informal training (e.g. EMBO's Laboratory Management Course).

3.2.3. Mentoring of new group leaders by senior staff is to be encouraged; particular guidance should be provided when a junior group leader recruits lab members for the first time.

3.2.4. Institutions and researchers may also hold informal workshops/retreats for group leaders to share experiences and promote further development.

3.2.5. Formal workshops or training courses may provide further guidance on practical measures to promote research integrity, such as responsible authorship and publication, record keeping and image processing.

3.3. Peer Review

3.3.1. Peer review is a primary control route for mitigating scientific misconduct. Regular meetings should be held to allow peers and group leaders to scrutinise each other's research, including:

- Students' meetings
- Individual lab meetings
- Group Leader meetings
- Departmental/Institute-wide meetings
- Inter-disciplinary meetings

3.3.2. Where possible, papers and funding applications should be peer reviewed prior to submission, in particular those from junior researchers.

3.4. Role of the Research Integrity Officer (RIO)

3.4.1. Host Institutions should have a designated member of staff who has responsibility for matters of research integrity within the organisation. Their responsibilities could include:

- Co-ordinating inductions for new starters and group leaders
- Issuing regular updates to relevant policies
- Acting as a point of contact for any research integrity-related queries and for the organisation's whistleblowing procedure
- Ensuring that policies relating to data archiving are adhered to
- Orchestrating internal peer review

3.5. Policies that host institutions should implement to support research integrity

Organisations in receipt of CRUK-funding should hold each of the documents set out below in sections 3.5.1 to 3.5.3 below, benchmarked against other reputable research organisations.

These documents, along with a copy of the Concordat, should be held as a set and be clearly accessible/visible to all staff via links on websites or clearly signposted on shared drives. They should be given to all new starters and visiting researchers. Reminders should be sent periodically to all staff so that awareness of the policies, and where they can be found, remains high.

The key policy documents are:

3.5.1. ***Procedure to Investigate Allegations of Misconduct*** – A document detailing the various stages that would occur when investigating allegations of scientific misconduct. This does not need to be a separate document relating specifically to scientific misconduct, i.e. it can be a procedure that covers a wide range of issues. See further section 3.8.

3.5.2. ***Whistleblowing procedure*** – A policy statement regarding the treatment of whistleblowers under the Public Interest Disclosure Act (1998) should be made available to all members of staff, outlining;

- that scientific misconduct is taken seriously
- the process to follow when raising concerns
- that any member of staff with genuine concerns can raise them confidentially without fear of suffering any detriment
- equally, that disciplinary procedures are in place to deal with malicious allegations.

3.5.3. ***Code of Good Practice*** – A document describing the values and behaviours that are expected to be upheld by researchers when undertaking research at the institution.

3.6. Data archiving

3.6.1. Host Institutions should establish clear, consistent data retention policies applicable to, and covering all data generated by, the research undertaken at the institution. All data generated should be subject to these policies.

3.6.2. It is advisable, and where resource allows, that any raw data (and in particular data relating to published research) is retained for a minimum of 10 years or, in the case of clinical data, a minimum of 20 years. In addition, if image processing is used, a copy of the original image file as well as the manipulated image should be retained. Research based on clinical samples or relating to public health might require storage for longer to allow for long-term follow-up to occur.

3.7. Continuous improvement

Cancer Research UK believes that the culture of research integrity outlined in Section 3.1 should be underpinned by a philosophy of continual improvement.

Given the constantly evolving world of research, Host Institutions should periodically review processes and procedures to ensure they remain fit for purpose.

In addition, Host Institutions should seek opportunities to share their knowledge to foster the development and the dissemination of best practice.

3.8. Investigating Allegations of Misconduct

3.8.1. As per CRUK's *Grant Conditions*, the Host Institution must have formal written procedures for the handling of allegations of research misconduct. CRUK considers it the Host Institution's responsibility to investigate *all* allegations of scientific misconduct.

3.8.2. CRUK recommends that those procedures include:

- A definition of research misconduct that includes, or is consistent with, the matters set out in sections 2 and 4.
- Guidance as to who can make an allegation, how to do so and to whom to send it.
- The timescales within which allegations will be dealt.
- The fact that CRUK must be notified of allegations at the earliest opportunity.
- The possible sanctions if the allegation is upheld.
- How an appeal how appeal can be made.
- Procedures for record keeping, including the fact that contemporaneous records of all allegations and investigations must be kept, who is responsible for keeping them and how those records should be kept.
- Provisions to apply to visiting researchers (including students or staff).

4. DEFINITIONS

4.1. **Host Institution** means the university, institution or other organsation at which some or all of the research funded by a CRUK grant will be carried out.

4.2. **Institute** means the five core-funded Cancer Research UK Institutes, namely the Cancer Research UK Beatson Institute, the Cancer Research UK Cambridge Institute, the Cancer Research UK/MRC Oxford Institute for Radiation Oncology, the Cancer Research UK Manchester Institute and the Francis Crick Institute.

4.3. **Scientific Misconduct** has the meaning set out in section 2 and includes the following:

- **Fabrication**: the creation of false data or other aspects of research, including documentation and participant consent;
- **Falsification:** the inappropriate manipulation and/or selection of data, imagery and/or **consents**;
- **Plagiarism:** the misappropriation or use of others' ideas, intellectual property or work (written or otherwise), without acknowledgement or permission;
- **Misrepresentation,** including:
  - misrepresentation of data, for example suppression of relevant findings and/or data, or knowingly, recklessly or by gross negligence, presenting a flawed interpretation of data;
  - undisclosed duplication of publication, including undisclosed duplicate submission of manuscripts for publication;
  - misrepresentation of interests, including failure to declare material interests either of the researcher or of the funders of the research;
  - misrepresentation of qualifications and/or experience, including claiming or implying qualifications or experience which are not held;
  - misrepresentation of involvement, such as inappropriate claims to authorship and/or attribution of work where there has been no significant contribution, or the denial of authorship where an author has made a significant contribution;
- **Breach of duty of care,** whether deliberately, recklessly or by gross negligence:
  - disclosing improperly the identity of individuals or groups involved in research without their consent, or other breach of confidentiality;
  - placing any of those involved in research in danger, whether as subjects, participants or associated individuals, without their prior consent, and without appropriate safeguards even with consent; this includes reputational

danger where that can be anticipated;

- not taking all reasonable care to ensure that the risks and dangers, the broad objectives and the sponsors of the research are known to participants or their legal representatives, to ensure appropriate informed consent is obtained properly, explicitly and transparently;
- not observing legal and reasonable ethical requirements or obligations of care for animal subjects, human organs or tissue used in research, or for the protection of the environment;
- improper conduct in peer review of research proposals or results (including manuscripts submitted for publication); this includes failure to disclose conflicts of interest;
- inadequate disclosure of clearly limited competence; misappropriation of the content of material; and breach of confidentiality or abuse of material provided in confidence for peer review purposes.

- **Improper dealing with allegations of misconduct:**
  - failing to address possible infringements including attempts to cover up misconduct or reprisals against whistleblowers; or
  - failing to deal appropriately with malicious allegations, which should be handled formally as breaches of good conduct.

5. RELATED DOCUMENTS

5.1. **Cancer Research UK's Grant Conditions** http://science.cancerresearchuk.org/funding/terms-conditions-and-policies/index.htm

5.2. **Concordat to Support Research Integrity** http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Pages/research-concordat.aspx

5.3. **Code of Practice for Research: Promoting Good Practice and Preventing Misconduct (UKRIO)** http://www.ukrio.org/what-we-do/code-of-practice-for-research

6. DOCUMENT INFORMATION

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