Enhancing Research Integrity and Cultivating a Research Climate
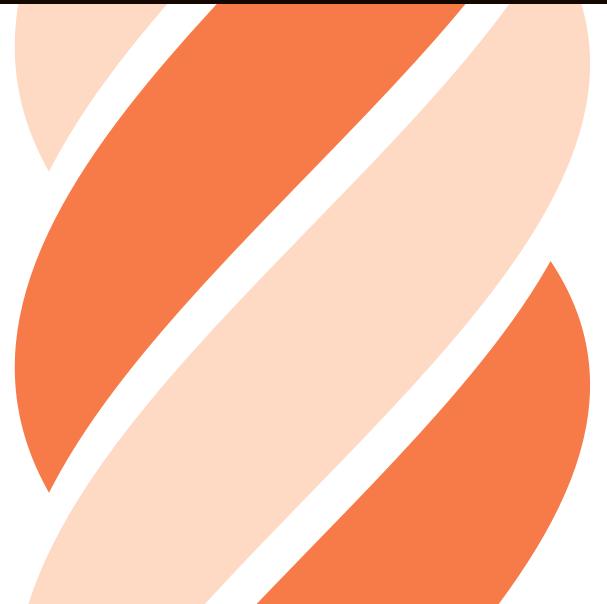
Guidelines for Research Support System

Contents

Introduction

Objectives and Background

Research institutions are required to put in place appropriate facilities and systems for conducting research activities, support the work of researchers at an organizational level, and work with researchers to disseminate the results of academic research widely throughout society. However, in Japan, efforts to promote research integrity are often disparate and uncoordinated because of differences in scale and policy among institutions. Ensuring continuity of interventions can also be problematic because the personnel in charge of initiatives are often transferred to different departments or tasks. It is therefore anticipated that efforts to share materials across institutions and develop a foundation to support their research activities will contribute toward cultivating a good research climate at the organizational level, while at the same time supporting the work of researchers.

Here, "research climate" refers to the conditions within a research institution that are shaped by the overall manner in which it conducts its research activities. In other words, the research climate is a product of the intentions of the research institution's executive branch and the overall body of activities to promote research ethics and research integrity by heads of department, researchers, administrative staff, and others. If research activities are being conducted in an academically and socially responsible manner, the research institution is cultivating a healthy research climate. Mutually influential macro- and micro-research climates are also likely to exist side by side. For example, the overall research climate in the organization will influence awareness on research ethics and research integrity among its individual members. Thus, it is not possible to cultivate a desirable research climate simply by targeting specific members of the institution. It is important is to conduct activities around research ethics and research integrity on multiple levels, which would typically mean enhancing awareness among individual members, advancing initiatives at the departmental level, and managing efforts at the organizational level.

To address these challenges, we collected information on research ethics and research integrity from institutions in Japan and overseas, through interviews, questionnaires, and a literature review in the "International Survey Research on the Formulation of Research Support Guidelines in Research Institutions" (Principal Investigator: Nouchi Rei), which formed part of the "Research and Development Program for Enhancement of Research Integrity" by the Japan Agency for Medical Research and Development(AMED). The culmination of this work is the document "Enhancing Research Integrity and Cultivating Research Climate – Guidelines for Research Support Systems" (hereafter "Guidelines"). It is our hope that the Guidelines play a role in cultivating a good research climate at research institutions. As mentioned above, the Guidelines are intended not only for researchers but also for university research administrators(URAs) and administrative staff(hereafter "research support providers"), and for the

executive branches of research institutions. The reason for which the Guidelines are also aimed at actors other than researchers is explained below.

Research Ethics and Research Integrity: Roles of Researchers and Research Institutions

In the course of their research, researchers have a responsibility to ensure compliance with any standards and regulations that might apply to their work, present results objectively, and report outcomes in an honest and forthright manner. The "Singapore Statement on Research Integrity," which was drafted in 2010 at the World Conference on Research Integrity, sets out fourteen responsibilities researchers and research institutions should fulfill[1].

Responsibilities

1. Integrity: Researchers should take responsibility for the trustworthiness of their research.
2. Adherence to regulations: Researchers should be aware of and adhere to regulations and policies related to research.
3. Research methods: Researchers should employ appropriate research methods, base conclusions on critical analysis of the evidence, and report findings and interpretations fully and objectively.
4. Research records: Researchers should keep clear, accurate records of all research, such that they allow verification and replication of their work by others.
5. Research findings: Researchers should share data and findings openly and promptly as soon as they have had an opportunity to establish priority and ownership claims.
6. Authorship: Researchers should take responsibility for their contributions to all publications, funding applications, reports, and other representations of their research. Lists of authors should include all those and only those who meet applicable authorship criteria.
7. Publication acknowledgment: Researchers should acknowledge in publications the names and roles of those who made significant contributions to the research, including writers, funders, sponsors, and others, but do not meet authorship criteria.
8. Peer review: Researchers should provide fair, prompt, and rigorous evaluations and respect confidentiality when reviewing others' work.
9. Conflict of interest: Researchers should disclose financial and other conflicts of interest that could compromise the trustworthiness of their work in research proposals, publications, and public communications, as well as in all review activities.
10. Public communication: Researchers should clearly distinguish professional comments from opinions based on personal views.

---

1 The following is excerpted from the section titled "Responsibilities" in World Conference on Research Integrity, Singapore Statement on Research Integrity, available from https://wcrif.org/statement.(accessed 2022-02-10)

11. Reporting irresponsible research practices: Researchers should report to the appropriate authorities any suspected research misconduct, including fabrication, falsification, or plagiarism, and other irresponsible research practices that undermine the trustworthiness of research, such as carelessness, improperly listing authors, failing to report conflicting data, or the use of misleading analytical methods.

12. Responding to irresponsible research practices: Research institutions, as well as journals, professional organizations, and agencies that have commitments to research, should have procedures in place for responding to allegations of misconduct and other irresponsible research practices and for protecting those who report such behavior in good faith. When misconduct or other irresponsible research practice is confirmed, appropriate actions should be taken promptly, including correcting the research record.

13. Research environments: Research institutions should create and sustain environments that encourage integrity through education, clear policies, and reasonable standards for advancement while fostering work environments that support research integrity.

14. Societal considerations: Researchers and research institutions should recognize that they have an ethical obligation to weigh societal benefits against risks inherent in their work.

Furthermore, researchers are expected to fulfill responsibilities in the course of their research and adhere to legal and ethical standards when handling the data on which their work is based. In the process of publishing their findings, they must present the data and ideas generated through the research process in an objective form, while ensuring reproducibility; show respect for the research outcomes of fellow researchers; and clearly explain their contributions to the academic field and to other stakeholders. Regardless of whether the subjects of their research are humans, animals, cultures, living organisms, the environment, or physical objects, researchers must treat them with respect and consideration. When the research subjects are people or groups, it is also necessary to consider differences in gender, culture, religion, ethnic background, and class, as well as other issues, such as able-bodiedness. Moreover, conflicts of interests, which might potentially introduce bias into research, must be disclosed.

The Singapore Statement prescribes responsibilities not only for researchers but also for research institutions. Although research institutions are only mentioned in the final three responsibilities—responding to irresponsible research practices, research environment, and societal considerations—the role of research institutions does not end there. This would also include the provision of storage facilities for research records and data, management of researcher conflicts of interests, and establishment of research ethics review committees to ensure research is done in accordance with the various policies and standards, as well as management of the aforementioned. Research institutions should support researchers to enable them to engage in research responsibly, having fully understood the requirements and responsibilities that must be fulfilled in the course of their work. Furthermore, research institutions have an obligation to ensure that research activities can take place only once full consideration has been

made regarding the health, safety, and welfare of researchers and all those involved in the research, including graduate students, technicians, and other personnel. Also, research ethics and research integrity are connected to all facets of a research institution's activities. Thus, it is important that research integrity is considered not in isolation but in relation to the other objectives and missions of the organization(education of, outreach to, and involvement in local communities, etc.) when planning initiatives for enhancing awareness of research integrity.

Terminology

The terms "research ethics" and "research integrity" require some clarification. In these Guidelines, **research ethics** refers to policies, procedures, and considerations intended to protect the people who participate in research, especially in the context of medical research. **Responsible conduct of research (RCR)** refers to the manner of conduct adopted by the researcher in the course of carrying out research activities and publishing the results; this may include issues of research misconduct—falsification, fabrication, and plagiarism(FFP)—as well as other aspects, such as authorship, peer review, and responsibility to society. **Research Integrity refers to the attitude of not only the researcher but also other members of the research instituion and the research institution as a whole toward research activities in good faith**.

In Japan today, the term "research ethics" is used in various ways. It may be used to mean RCR and/ or research integrity or a meta-concept that includes research ethics and RCR, research integrity as defined above. As, internationally, the terms "research ethics" and "research integrity" are differentiated and specified separately, for these Guidelines, they are treated as distinguished notion and used in the senses described above. Going forward, it should be noted that the Cabinet Office of Japan has also adopted the term "research integrity" in efforts to identify the integrity of the research enterprise and the points to be considered with regard to risks that might accompany the internationalization and openness of research activities.

Cultivating a Good Research Climate in Research Institutions

As mentioned at the outset, the research climate of a research institution is shaped by the organizational behaviors and actions of its members in relation to research activities. If others nearby are carrying out their research activities and duties in a responsible manner, individuals are similarly compelled to scrutinize their own behavior and act responsibly. However, in the kind of research environment where actors obstruct each other's work, are subject to mistreatment involving harassment, or receive unfair evaluation, it is unlikely that research integrity will be achieved.

It is only natural that as the core of the research institution, researchers are subject to scrutiny with regard to research ethics and research integrity; however, the activities of research support providers (administrative staff and URAs), and those of the executive branch, which manages the research

environment and formulates plans for its development, are significant. To ensure that international joint research is carried out proactively and research activities adhere to international rules, as researchers do, so must other actors ensure that their knowledge of research ethics and research integrity remains comprehensive and up to date. Research is more than just the work of researchers. All those involved in research should be conscious of the fact that they are part of the process of ensuring research ethics and research integrity and make efforts to understand what this entails. For example, compliance training and training in research ethics and research integrity play an important role in cultivating a good research climate in the research institution. Those who are in charge of this training in the organization are responsible for establishing norms of conduct for other researchers and research support providers, and for reconsidering the methods and approaches used in the training itself. However, it is undesirable for this process of revision to be controlled by certain specific individuals or groups within the organization or carried out in an arbitrary or inconsiderate manner. Ideally, opinions are shared between researchers, who provide expertise, and research support providers, who inform the discussion from an administrative perspective. Researchers and research support providers should work together to promote fair and honest research in the spirit of mutual respect.

Alignment with Related Guidelines and Regulations

In Japan, guidelines have been published on dealing with research misconduct and misconduct in competitively funded research activities and on initiatives related to bioethics and safety in life sciences. Along with responsibilities to be shouldered by individual researchers, these guidelines stipulate that the responsibility for providing opportunities to cultivate appropriate ethical values and develop an appropriate research environment lies with the research institution. The guidelines on research misconduct place particular focus on the definition and scope of misconduct and on the implementation of investigations into misconduct, and although research institutions are expected to conduct autonomous initiatives, there is no mention of specific activities that they are required to implement—suggesting an emphasis on academic freedom and respect for the autonomy of individual universities and institutions. In contrast, these Guidelines are an attempt to advance a more concrete description of the roles to be played by research institutions that propose a set of referential case studies and recommendations aimed at establishing healthy, honest, and respectful research environments. That is, this document is not merely a set of procedures for dealing with research misconduct, deviation from ethical standards, and conflict of interest issues after they have occurred; rather, the emphasis is on the initiatives that an organization as a whole can take to prevent such acts from happening and reduce occurrences in the first place. However, given that differences exist among institutions with regard to their scale, operating bodies, institutional policies, size, and distribution of resources, it is unrealistic to expect all institutions to adopt exactly the same measures. Moreover, the challenges and roles that arise will vary depending on the level at which the individual is positioned within the institution. Accordingly, to cultivate a healthy research climate, it is necessary to adopt multiple distinct approaches that respond to each of these

levels.

Structure and Method of Using These Guidelines

Since the status and position of those involved in promoting research ethics and research integrity within the research institution will vary depending on its size, policies, and mindset, it is not possible to prescribe a uniform set of action guidelines. Therefore, these Guidelines are designed to enable any person within a research institution, including researchers, research support providers, and the executive branch, to consider adopting measures they perceive necessary in light of the roles and responsibilities they have been assigned. Although parts of this document are written with a degree of focus on certain readers, we encourage readers to make use of any of the content that might apply to their own work, regardless of the specific roles or positions mentioned.

First, the chapters in this guideline include a **checklist** of measures to be implemented by research institutions is provided. In cases where there are items in the checklist that are not applicable, research institutions may wish to discuss and consider measures to be taken to promote research ethics and research integrity in the organization while referring to the **action plans** or specific **case studies** provided. The Guidelines also refer to a large number of case studies conducted outside Japan. We expect readers to think broadly about the kind of initiatives that could be introduced in their institution to promote research ethics and research integrity. These Guidelines are not, however, intended to be an exhaustive manual on how to cultivate a healthy research climate: Research institutions are advised to go beyond the ideas presented in these Guidelines to develop their own initiatives.

Basic Principles of These Guidelines

These Guidelines are based on the following six basic principles and their application toward cultivating a healthy research climate and promoting research ethics and research integrity throughout research institutions.

Basic Principles

Honesty:
Conduct research activities objectively and in good faith

Capacity for implementation:
Develop and maintain the ability to put in place self-regulating measures on research integrity

Respect:
Conduct research activities with respect toward colleagues, research subjects, and the public

---

> Transparency:
>   Share details of research activities and findings widely with the academic community and society
> Fairness, Diversity, and Inclusion:
>   Consider the different cultures, knowledge, and perspectives of colleagues, and treat each other in an impartial and unbiased manner
> Stewardship:
>   Shoulder responsibility as a research institution for carrying out research activities

The checklist stipulates goals to be achieved by the research institution, or criteria for judging whether the goals have been achieved, based on these six basic principles. Then, if an item on the checklist has not been achieved, the action plan can inform the development of appropriate countermeasures.

Intended Readers

These Guidelines are intended for researchers, research support providers, and those in charge of managing research activities in research institutions, for use when considering matters necessary for the maintenance and management of research ethics and research integrity and improvement of initiatives in place at the research institution, in relation to their individual activities and duties. However, this categorization is for convenience. For example, researchers conduct their own research activities, and they may be involved in supporting their colleagues or training the next generation of researchers, or they may play a role in managing the research institution. It is thus difficult to draw clear lines between the activities of the various parties involved. Similarly, research support providers may work in the position of a leading researcher at one institution and research support provider at another. Therefore, it is appropriate that readers will look to take on roles they feel capable of fulfilling, without constraints due to position or status within the organization.

Acknowledgments

Literature Review

Members of the Specialist Committee

1

Cultivating A Good Research Climate

Related basic principles

Honesty

Capacity for Implementation

Respect

Transparency

Fairness, Diversity, and Inclusion

Stewardship

1 Cultivating A Good Research Climate

☐ Are there one or more people in the research institution who are responsible for coordinating initiatives to promote the cultivation of a good research climate?

☐ Are initiatives being carried out in the research institution to reinforce awareness of the importance of research integrity, not only among researchers but also among research support providers (administrative staff, URAs, etc.) and the executive branch?

☐ Are initiatives that emphasize research integrity being carried out continuously in the research institution?

☐ Does the executive branch of the research institution demonstrate leadership in clearly articulating issues around the promotion of research integrity to members of the organization?

☐ Does the research institution disseminate information on research integrity to its members?

☐ Are the roles and responsibilities of departments and staff related to research integrity shared within the research institution along with an overview of relevant rules and regulations?

☐ Are opportunities provided for researchers, research support providers, the executive branch, and students to meet and discuss problems related to the implementation of initiatives, training, etc., on research integrity?

☐ Are there clear procedures in place for decision-making to resolve issues shared by researchers, research support providers, the executive branch, and students?

☐ Do those in charge of research support visit each research office and department periodically to establish mutual communication?

☐ Does the research institution carry out initiatives to enhance the overall transparency of its education and research activities?

☐ Does the research institution emphasize the duty of creating a better research environment rather than simply dealing with research misconduct, as the objective of carrying out research integrity-related tasks?

☐ Is there a good understanding of which members of the research institution are actively involved in research integrity activities, both internally and externally?

☐ Are there opportunities to share information on research integrity with other research institutions, within the boundaries of confidentiality?

☐ Is the institution up to date regarding the state of research integrity domestically and internationally?

Action Plan

► The research institution should verify the state of research integrity within the organization and disseminate information using different communication methods for different groups. The communication methods most effective for each group will vary depending on whether recipients are students, researchers, principal researchers, administrative staff, or managers of departments or the organization.

► There may be differences in how people approach research integrity issues that arise in the course of research activities depending on the particulars of the research, the research subjects, or the academic field. It is better to set out a variety of approaches than to disseminate information in a one-sided manner.

► In addition to regular e-learning and training events, other activities and projects should be implemented to raise the level of awareness of research integrity. Materials such as videos are particularly effective in creating opportunities for those who are new to the concept of research integrity to think through issues through the lens of more familiar phenomena.

► To promote research integrity, basic exercises conducted in classes and seminars should be combined with guidance and mentorship initiatives in research laboratories. However, if only "inadequate mentoring" can be provided, both in terms of time and content, mentoring may have the opposite effect of what is intended. There are also mentors who might themselves be unfamiliar with the details that need to be considered when conducting research or might not be up to date with the latest international trends or initiatives by academic societies. Therefore, it is important that not only undergraduate and graduate students in the early stages of their careers but also principal investigators (PIs) and other research supervisors stay up to date about RCR and that any guidance provided is verified by multiple researchers. Of course, the use of mentorship programs does not mean that the responsibility for RCR education lies solely with the mentors.

► As some members are more closely involved in research integrity than others are, the research institution should configure training content tailored to the different positions of members and ensure that individuals understand their respective roles. The creation of either official or unofficial opportunities for dialog aimed at cultivating a good research climate by researchers and research support providers is another effective way to even out awareness of the respective roles.

► When planning lessons, seminars, and workshops for students, incorporate research integrity in instruction on research methods, presenting results (handling data, statistical analysis, ensuring reproducibility, image data editing), and writing research papers. This will help not only the

students who undertake this education but also the researchers who provide it to improve their knowledge and skills. And it may be possible to introduce RCR-related components in ethics classes focusing on ethics for specialized jobs or applied ethics, such as engineering ethics, medical ethics, and bioethics.

► Steps should be taken to ensure that researchers, research support providers, the executive branch, and students have a common knowledge of research integrity. To that end, it may be effective to use e-learning programs, which enable training on unified basic content related to research integrity to be administered beyond institutional boundaries. It is important that discussions are conducted after members have acquired this knowledge.

► Human resources within the research institution should be assigned to work as specialists in handling research integrity initiatives and training. If the incumbents are unavailable, other personnel should be trained for the role.

► The research institution should implement projects at the institutional level that enable members to share their opinions and exchange information about the research environment and the institution's initiatives from their own perspectives or give directions through the faculty council to conduct training within research laboratories. For example, inter-laboratory internships; vice-mentorship systems that enable students to receive additional research guidance from people other than their primary mentor; and exchange programs with external laboratories can be useful as they allow students to view their research laboratory from a more objective perspective. (However, there is a need to give due consideration when handling confidential information, such as research data.) In doing so, differences of opinion at the laboratory or institutional level should be brought out into the open to draw attention to problems with the organization among individual students.

► If problems regarding research activities are identified, they should be shared within the organization, and improvements should be made. The first step is to propose improvements, which might involve a researcher reporting to the faculty council, a research support provider informing their immediate supervisor, or a student consulting their academic advisor. It is important to confirm the decision-making procedures used to evaluate the progress of improvements at the individual level and elevate efforts to a higher level or to the institution as a whole.

► To ensure that problems arising in the research institution are shared, members should constantly strive to build mutually supportive relationships and establish environments that enable them to convey their opinions in a frank and forthright manner.

► References to research integrity should be included in the objectives of the research institution.

Having done so, the organization should take specific measures to achieve those objectives and cultivate a good research climate.

► research integrity initiatives should be planned at a level where all members are involved, and the research institution should provide support toward incorporating research integrity policies into daily practice. There is a limit to individuals' ability to collect information and to the nature of the information that can be collected. Superiors and the executive branch should be proactive in providing support to encourage active and meaningful efforts by members. It may be a good idea to provide incentives linked to the level of contribution for members who work actively to promote research integrity in the research institution or research community. One way of doing this is to formally commend and recognize members who play an active role in promoting research integrity, whether internally or externally. Such a posture will serve to highlight to members that the research institution takes research integrity issues seriously.

► The research institution should listen to the opinions of members who transfer in from other institutions. There is no guarantee of the methods employed in the research institution to date being the only correct ones. It is important to create opportunities to periodically review practices that have become an implicit part of the way the research institution operates, drawing on opinions based on case studies and experiences at other institutions. The research institution should provide support for improving policies and training on research integrity. Members transferring in might also exhibit abnormal behavior or misunderstandings with regard to research ethics and research integrity. In such cases, it is important to provide adequate opportunities for training.

► Research support providers should strive to understand the conventions of research work and the time constraints faced by researchers when conducting research support activities. For example, researchers may be required to be in a certain place at a certain time for lectures, medical examinations at university hospitals, experiments, management of experimental animals, cultured cells, etc., and participation in various committees. Steps should be taken to ensure that researchers do not miss out on initiatives on research ethics and research integrity for these reasons. Moreover, researchers must not use these duties as an excuse to avoid activities on research ethics and research integrity.

► The research institution should periodically conduct awareness surveys targeting all members of the organization because differences may arise among members on the level of achievement of efforts to promote research integrity. Surveys may be carried out by research promotion departments or other divisions responsible for overseeing research integrity or compliance in the research institution. Research institutions comprise multiple levels; therefore, overall awareness of research integrity in the organization can be enhanced if institution leaders (the executive branch, including

the president, vice president, and directors) and laboratory leaders (professors, associate professors, and other PIs) play active roles in the initiatives of the survey.

► Those in charge of promoting research integrity in the organization should make regular visits to research offices and laboratories to observe problems and share information, which may also be an effective way of grasping the situation and issues in each research field. Moreover, this process may bring to light certain areas where information provided by the research institution is not reaching those involved in research activities. Anonymous surveys are a useful tool for creating an environment where anyone can share their opinions freely regardless of their position or duties in the organization.

► However, even if those in charge of promoting research integrity in the research institution visit research offices or laboratories for the sole purpose of communication, the members there may suspect a problem with their work and feel intimidated. The method of approach and words used should be chosen carefully when communicating with members in different positions within the organization. In addition, it is important to adopt a style of speaking and use of language that suit the participants when giving a speech or conducting training on research integrity in the research institution.

► There must be an understanding that top-down approaches alone are insufficient to sustain a suitable research environment. For example, harassment may sometimes lead to research misconduct. What is important in the promotion and maintenance of research integrity is for members to build mutually supportive relationships.

► To develop an objective perspective on the initiatives in place at the research institution, members should actively take part in relevant domestic and international academic conferences and meetings. It is a good idea to gather information from the publications of those academic societies.

► Going beyond the institutional level, several organizations are working to establish research integrity networks at the national and regional levels, including the World Conference on Research Integrity,[2] APRI Network Meeting,[3] European Network of Research Integrity Offices,[4] Netherlands Research Integrity Network,[5] Association of Research Integrity Officers (ARIO) in the US,[6] and Research Integrity Scholars and Educators Consortium (RISE),[7] part of the Association of Practical and

---

2 World Conference on Research Integrity, https://wcrif.org(accessed 2022-02-10)
3 Asia Pacific Research Integrity 2018 Taiwan, https://www.apri2018.org.(accessed 2022-02-10)
   ASIA PACIFIC RESEARCH INTEGRITY 4th 2021 Seoul, http://2021seoulapri.org(accessed 2021-11-25)
4 European Network of Research Integrity Offices, http://www.enrio.eu(accessed 2022-02-10)
5 Netherlands Research Integrity Network, https://www.nrin.nl(accessed 2022-02-10)
6 Association of Research Integrity Officers, https://www.ariohq.org/ (accessed 2022-02-10)
7 Research Integrity Scholars and Educators, https://www.appe-ethics.org/appe-rise-sm(accessed 2022-02-10)

Professional Ethics (APPE).[8] Check the information disseminated by these organizations to explore the international trends.

Case Studies

✳ A study by Haven et al. showed that awareness and understanding of research integrity varies among researchers depending on their academic rank and field. Marked differences were observed between researchers in experimental fields, who come into frequent contact with various regulations in the course of their work, and researchers in the humanities and social sciences. Ideally, such variation among fields should be considered when implementing measures on research integrity.[9] In Finland, there is an initiative wherein tools such as e-learning are employed as common educational formats to teach the basic concepts of research integrity, and participants from different fields discuss case studies of research misconduct in relation to their respective research areas. Such efforts that go beyond individual research domains may be useful in drawing attention to differences between the natural sciences and the humanities and social sciences.[10]

✳ The following examples of projects that go beyond individual research institutions are taken from the Integrity in Practice Toolkit (2018) by the United Kingdom Research Integrity Office (UKRIO). It may be a good idea to establish opportunities for exchange that focus on themes such as the implementation and evaluation of research activities this way.

– World Economic Forum Young Scientists Community: A group of researchers under the age of 40 came together to identify and reflect on the cross-cutting ethical issues they face within a modern research environment. (Shared awareness among researchers of the same generation)[11]

– Barcelona Biomedical Research Park Code of Good Scientific Practice: Research teams discussed standards of research integrity and developed consensus. (Self-regulation)[12]

– RMIT University Engaging for Impact 2018: This project evaluated the impact of institutions' research activities beyond academia, on societies and governments. (Research integrity in the social sphere)[13]

---

8 The Association for Practical and Professional Ethics, https://www.appe-ethics.org/（accessed 2022-02-10)
9 Haven, T., Tijdink, J., Pasman, H.R. et al.(2019)Researchers' perceptions of research misbehaviours: a mixed methods study among academic researchers in Amsterdam. *Research Integrity and Peer Review* 4, 25. https://doi.org/10.1186/s41073-019-0081-7
10 See comments by members of the Review Committee of these Guidelines and Ministry of Education, Culture, Sports, Science and Technology(MEXT), "Report on the Findings of the Survey and Analysis of Standards in Research Ethics Education Content in Foreign Countries – March, 2020" pp. 101–116. https://www.mext.go.jp/content/20200902-mxt_kiban02-1418732_00001_003.pdf（accessed 2022-02-10)
11 World Economic Forum, Communities, Young Scientists, https://www.weforum.org/communities/young-scientists(accessed 2022-02-10)
12 Code of Good Scientific Practice, https://prbbgoodpractice.wordpress.com/the-code/（accessed 2022-02-10)

– Open Pharma Group: Online or face-to-face meetings were held with representatives of research departments to improve communication across departments and promote consensus related to disclosure of research results. (Shared awareness across disciplines and departments)[14]

– ConScience App: Tools are provided to view a play (video) about ethical dilemmas faced by scientists in their research and conduct a 30-minute discussion facilitated by an instruction manual. (Deciding an honest course of action)[15]

– The LAB: Avoiding Research Misconduct (US Office of Research Integrity [ORI]): Interactive video materials that allow the viewer to experience incidents of research misconduct that occur in a research laboratory from different perspectives, including a graduate student, post-doctoral researchers, a PI, and staff in charge of research integrity. Participants learn about ensuring research integrity and the rationale behind the concept through an interactive video that requires them to answer multiple-choice questions while viewing a drama. (Deciding an honest course of action)[16]

* Standard Operating Procedures for Research Integrity (SOPs4RI 2020), a consortium that received grants from Horizon 2020, provides support to research institutions in formulating plans to promote research integrity. The implementation of these plans may become a contractual obligation for research institutions that receive funding from Horizon Europe, a framework program of the EU.[17]

* At the University of California San Diego, researchers who have made substantial contributions to academic, research, and professional integrity are recognized as "Integrity Champions" each year, and details of their research activities are published on the university website.[18]

* At the University of Nevada, various departments in the organization collaborate to hold an event called Ignite Integrity Week. To encourage open discussions, a series of workshops, presentations, and panel discussions about various issues related to research integrity have been organized, along with movie screenings and trivia nights.[19]

* At the University of Tokyo, a Research Ethics Week[20] is held each year around September, led

13 Engagement and Impact Assessment 2018-19, National Report
    https://dataportal.arc.gov.au/EI/NationalReport/2018/ (accessed 2022-02-10)
14 https://openpharma.blog (accessed 2022-02-10)
15 The ConScience App, http://www.hetacteursgenootschap.nl/productions/the-conscience-app/ (accessed 2022-02-10)
16 The Lab, https://lab.jst.go.jp (accessed 2022-02-10)
17 Bouter, L. What Research Institutions Can Do to Foster Research Integrity. *Science and Engineering Ethics* 26, 2363–2369 (2020).
    https://doi.org/10.1007/s11948-020-00178-5
18 UC San Diego Integrity Awards, https://academicintegrity.ucsd.edu/events/integrity-awards/index.html (accessed 2022-02-10)
19 University of Nevada, Reno, Research Integrity, Ignite Integrity events and contest,
    https://www.unr.edu/research-integrity/about/ignite-integrity (accessed 2022-02-10)

by the Department of Research Promotion. A similar event, Research Ethics Enhancement Week[21], takes place at Doshisha University, with talks and panel discussions.

* At the Tokyo Institute of Technology, research integrity education is not provided through specific courses or subjects but under an approach that facilitates learning across the curriculum at every opportunity. Importance is placed not on "what has been taught" but on "what skills have been acquired."[22]

* In medical research ethics, the role of research ethics consultant (REC) is becoming increasingly important to researchers and individuals/organizations involved in research. RECs are also expected to play a critical role in formulating policies and carrying out business at the institutional level, when dealing with various research-related issues (issues arising during the research process, issues related to human subject research, etc.).[23]

* The Survey of Organizational Research Climate (SOURCE), available through the University of Illinois, can be used as a measure of an institution's research climate.[24] This instrument aggregates survey responses from each individual member of the research institution to measure the overall research climate. The more members regard the decisions made by the research institution as fair and reasonable the more they trust the institution and follow its decisions, leading to a lower likelihood of problematic behavior. If this is not the case, there is a higher chance that researchers will behave inappropriately.[25] However, results are also liable to vary, depending on the characteristics of each department, because responses are compiled at the individual department level within the research institution. Therefore, the level of integrity of the research institution as a whole may not be directly connected to that of its substructures.[26]

* There are cases where human resources have been assigned to work on research integrity and

20 Events at the University of Tokyo – 2020 Academic Year Research Ethics Seminar
    https://www.u-tokyo.ac.jp/focus/ja/events/e_z0705_00005.html(accessed 2022-02-10)
21 Doshisha University – List of Talks, Seminars and Events – Information about Research Ethics Enhancement Week, https://www.doshisha.ac.jp/event/2020/1001/event-detail-4070.html(accessed 2022-02-10)   22   Fudano J.(2019). University-wide Research Ethics Education: Initiatives at Tokyo Institute of Technology. Materials for JST Workshop, August 23 & 30, 2019, p. 15 https://www.jst.go.jp/kousei_p/upload/JST-WS2019-ppt_Fudano.pdf(accessed 2022-02-10)
22 Fudano J.(2019). University-wide Research Ethics Education: Initiatives at Tokyo Institute of Technology. Materials for JST Workshop, August 23 & 30, 2019, p. 15 https://www.jst.go.jp/kousei_p/upload/JST-WS2019-ppt_Fudano.pdf(accessed 2022-02-10)
23 Porter, Kathryn M., Danis, Marion., Taylor, Holly A., Cho, Mildred K., & Wilfond, Benjamin S.(2018). Defining the scope and improving the quality of clinical research ethics consultation: Response to open peer commentaries about the national collaborative. *The American Journal of Bioethics*, 18(2), W13-W15. DOI: 10.1080/15265161.2017.1413438
24 SOURCE, https://ethicscenter.csl.illinois.edu/source/ (accessed 2022-02-10)
25 Haven TL, Tijdink JK, Martinson BC, Bouter LM(2019)Perceptions of research integrity climate differ between academic ranks and disciplinary fields: Results from a survey among academic researchers in Amsterdam. *PLoS ONE* 14(1): e0210599. https://doi.org/10.1371/journal.pone.0210599
26 Wells JA, Thrush CR, Martinson BC, May TA, Stickler M, Callahan EC, Klomparens KL.(2014)Survey of organizational research climates in three research intensive, doctoral granting universities. *Journal of Empirical Research on Human Research Ethics*. 2014 Dec;9(5):72–88. doi: 10.1177/1556264614552798.

provide opportunities for consultation:

- University of Glasgow: Research Integrity Champions and Advisors were assigned.[27]
- The University of Sydney Nano Institute: A senior administrator and staff in charge of research integrity set up open lunch meetings where participants could exchange opinions readily and freely on real and hypothetical issues.[28]
- Australia National University: Schedules of personnel who were able to provide drop-in guidance on research ethics through Zoom were posted on the Internet, enabling members who required guidance to consult with Advisors readily and freely.[29]
- University of Helsinki: A Research Integrity Advisor System has been established, and Advisors have been trained. The Advisors carry out their tasks as part of their regular duties, and this is not a separate position offered by the university. The Advisors play the following roles:[30]

  - Advise and support researchers and staff in higher education or research institutions
  - Provide guidance for conducting investigations into research misconduct
  - Direct staff to appropriate departments or bodies
  - Provide guidance on how to write an allegation of research misconduct
  - Work with senior management of the research institution regarding matters concerning responsible research activities and misconduct
  - Improve own competence regarding research ethics and research integrity
  - Outreach and networking beyond the research institution

According to the University of Helsinki website (internally facing), there is one advisor at each of the four campuses. Essentially, one person is in charge of dealing with allegations from a wide range of research areas at each campus, and only basic and objective advice is provided. However, the University of Helsinki also employs a system wherein allegations of research misconduct are sent directly to the university chancellor, and the Advisors simply provide guidance in support of this process. It should also be noted that at some German universities, professors are appointed as ombudspersons to provide guidance on matters such as research misconduct. The difference between this ombudsperson and the Research

---

27 The University of Glasgow, RESEARCH AND INNOVATION SERVICES, Research Integrity Champion and Adviser Network, https://www.gla.ac.uk/myglasgow/ris/researchpolicies/researchintegrity/advisers/ (accessed 2022-02-10)
Understanding of the Research Climate" (p. 18), was an outcome of this initiative.
28 Research Integrity Lunch & Learn Workshop - Nano Institute, https://www.eventbrite.com.au/e/research-integrity-lunch-learn-workshop-nano-institute-tickets-46966794948 (accessed 2022-02-10)
29 Australian National University, Research Ethics Drop-In Sessions, https://services.anu.edu.au/news-events/research-ethics-drop-in-sessions (accessed 2022-02-10)
30 League of European Research Universities (2020) *Towards a Research Integrity Culture at Universities: From Recommendations to Implementation*, LERU

Integrity Advisor is that the former adopts a position closer to that of the claimant, whereas the latter provides information on the necessary processes and procedures from a neutral position.

✳ Qualitative research has revealed a tendency for leaders of research institutions to assume research misconduct issues as being unrelated to the work of their departments.[31] It is important for the executive branch of the research institution to enhance awareness of research integrity issues among those involved.

✳ The Tohoku University Research Integrity Promotion Office comprises faculty members from different academic disciplines. A system has been established wherein half of the personnel in charge of research integrity are redeployed within the organization. In combination with university-wide initiatives, this offers the advantage of increasing the number of personnel who are aware of the issues. Moreover, since some staff with experience remain in the original department, the cost of handing over work duties is low, and awareness and experience of research integrity can be shared.[32]

✳ At King's College London, Research Integrity Champions are assigned at the department level to provide consultation channels and work toward improving the research integrity environment in the department. These Champions are selected from among researchers, typically senior researchers with more experience.[33] In addition, the Champions are supported by Research Integrity Advisors. This manner of allocating duties to faculty members is frequently seen in British universities.[34]

✳ The Finnish National Board on Research Integrity (TENK) has built a network of Research Integrity Advisors. Since 2017, more than 100 Advisors from over 60 research institutions have been trained. This system was established in response to a need to reinforce awareness of research integrity among the international research community in Finland.[35]

---

31 Degn, L. (2020) Integrating Integrity: The Organizational Translation of Policies on Research Integrity. *Science and Engineering Ethics* 26, 3167–3182. https://doi.org/10.1007/s11948-020-00262-w

32 From the public speech "Human Talent to Fulfill the Role of the Educator in Research Integrity – Roles, Qualities and Development," presented at the Research Integrity Symposium of the Research Integrity Promotion Branch of the Ministry of Education, Culture, Sports, Science and Technology (MEXT) https://www.amed.go.jp/news/event/sympo_20201215.html, https://www.amed.go.jp/content/000076459.pdf (accessed 2022-02-10)

33 King's College London, Research Integrity Champions and Advisors, https://www.kcl.ac.uk/research/support/rgei/research-integrity/research-integrity-champions-and-advisors (accessed 2022-02-10)

34 Project Commissioned by the Japan Agency for Medical Research and Development, PwC Consulting "A Survey on Methods to Develop Specialized Personnel for Teaching Research Integrity," Survey Report, March 2020

35 Finnish National Board on Research Integrity (TENK), https://tenk.fi/en/research-misconduct/research-integrity-advisers (accessed 2022-02-10), The system described in the case study of Helsinki University mentioned in p. 18 of this document was an outcome of this initiative.

2

Establishment of Rules for Research Integrity

Related basic principles

Honesty
Capacity for Implementation
Transparency
Stewardship

2 Establishment of Rules for Research Integrity

☐ Are rules for RCR (rules on FFP and other forms of research misconduct, rules on research ethics, such as human and animal subject protection, etc.) in place in the research institution or its departments, and are these rules in compliance with national guidelines?

☐ Are rules concerning conflicts of interest, copyrights, intellectual property rights, information security, exports control, etc. included in the research institution's policies on research?

☐ Are the rules of the research institution, when compared with those of other research institutions, government ministries, and academic societies, revised regularly based on these comparisons?

☐ Are there rules in place that consider domestic and international collaborative research with other research institutions?

☐ Are the research institution's rules for research integrity shared properly among members of the organization and with the public?

☐ Are above rules updated continuously?

Action Plan

► National-level guidelines are based on the assumption that each research institution will establish its own guidelines on RCR. However, research subjects and methods are now more diverse than those in the past, and an abundance of collaborative research is being conducted. It is conceivable that a researcher, upon considering the option of conducting interdisciplinary research or collaborative research with other institutions, might realize that it is not possible to do so because a system is not in place in the research institution. Therefore, it is important to establish a broad range of rules governing research activities, without limiting coverage to the departmental structure of one's own institution.

► Where questions and issues are raised by researchers or come to light during administrative procedures, research support providers should share and accumulate information among all those involved. The rules of the research institution can then be updated periodically based on the questions and issues that emerge through this process. It is important to have a clear plan of who is responsible or authorized to decide whether a change is needed. Moreover, in the event of the institution being contacted regarding the various guidelines and regulations on research activities established by the government or relevant organizations, it should prepare to revise its rules to ensure that research can be carried out without obstruction.

► Rules may vary from one research institution to another in terms of their range of coverage and the

specific content of each provision depending on each institution's policies and mindset. While it is impossible to specify every detail, it is important to put in place decision-making processes for resolving discrepancies that arise between the rules of the research institution and external rules, regulations, and guidelines.

► The research institution will need to "translate" the principles of RCR that have been advocated by various organizations into more concrete practices and incorporate them into their activities. In doing so, the research institution should clearly state the values and norms to be adhered to by members, such as researchers, research support providers, and the executive branch, and by the research institution itself. Although certain responsibilities belong to either individuals, the organization, or both, it is crucial to understand that concepts such as culture and climate also exist in forms that rules cannot fully express.

► It is important to check the level of familiarity with rules and procedures for research integrity and work to disseminate and share information appropriately. It is often the case that the members of a research institution are unaware of the rules because the relevant information is not cascaded down to them. Particular attention should be paid to actors who are often under pressure to produce results, such as graduate students and new faculty members.

► In addition to enabling researchers and other members to verify the systems and rules of their own research institution at any time, rules and other essential information should be made available on the institution's official website to ensure transparency and objectivity in research activities. It is ideal not to limit access to this information to internally-facing websites, not only for the convenience of members who need to refer to it but also to demonstrate to society how the institution is conducting research in a transparent manner. However, this does not apply to information that includes the names of individuals or their contact details; Nor does it apply in cases where placing information in public-facing websites is likely to lead to unsolicited opinions and inquiries about that information from people outside the organization.

► Details of research integrity initiatives implemented by the research institution should be published on the official website or in institutional research (IR) reports. Such information is not only valuable in terms of visualizing the initiatives an organization has taken up but also useful if the organization intends to provide courses or seminars on research integrity and needs to select instructors or speakers. Ideally, this information would be actively disseminated to the public.

► The governance system and rules of the research institution should be reviewed and revised on a regular basis so as to overcome problems that arise during research, in keeping with international approaches to research integrity and rules of academic associations. Researchers must also be made

aware of this. There are cases where the results of a research project cannot be published after the research work has come to an end, due to procedural lapses during ethical reviews or submissions required to conduct the research.

Case Studies

* The following text is published on the website of a society for research administrators: "*... in organizations where responsible research is seen as a compliance box to check or undue pressure is placed on securing funding and publishing papers, unethical behavior may be more likely to arise. Sufficient attention and focus should be placed on conducting research with integrity so that it is integrated into organizational operations.*"[36] Thus, while compliance checklists have great practical value, it is important to be aware that when compliance is viewed as an obligation, it is possible that people will try to circumvent the system.

* South Africa's main funding agency, the National Research Foundation, has issued a statement on research ethics and issues in scholarly publishing based on discussions that took place at the World Conference on Research Integrity. The statement consists of twelve principles to which researchers and research institutions are required to adhere when conducting funded research in South Africa.[37]

* To promote social sciences research, the US Office of Behavioral and Social Sciences Research (OBSSR) has made recommendations, such as improving synergy between basic and applied research, enhancing measures to support integrated research, and adopting social science research findings in health research and practice.[38]

* Also in the United States, in 2016, the Centers for Disease Control and Prevention (CDC) released the CDC Guidance on Scientific Integrity, which is available to researchers and others involved in research through their online library.[39]

* In 2016, the American Statistical Association compiled a set of guidelines that clarify ethical

36 Taken from the website of the Institutional Culture & Organizational Barriers section of the Society of Research Administrators International.
https://www.srainternational.org/researchintegritytoolkit/inst-culture/proven-practices-inst-cul (accessed 2022-02-10)

37 ASSAf, CHE, DHET, DST, NRF and USAf. (2019). Statement on ethical research and scholarly publishing practices. South African Journal of Science, 115(11/12). https://doi.org/10.17159/sajs.2019/a0316

38 Office of Behavioral and Social Sciences Research, U.S. Department of Health and Human Services. (2016). Office of Behavioral and Social Sciences Research Strategic Plan 2017-2021. https://obssr.od.nih.gov/wp-content/uploads/2016/12/OBSSR-SP-2017-2021.pdf (accessed 2022-02-10)

39 Office of the Associate Director for Science, Centers for Disease Control and Prevention (U.S.). (2016). CDC guidance on scientific integrity. Version 2.1. https://stacks.cdc.gov/view/cdc/40008 (accessed 2022-02-10)

issues related to statistical analysis and data manipulation. These guidelines define good statistical practice and the responsibility of the researcher and research institution.[40]

✳ Wiley has compiled guidelines on research integrity and publishing ethics for journal and book reviewers. In the latest version (June 2021), new guidelines on diversity, equity, and inclusion were added.[41]

✳ The International Committee of Medical Journal Editors (ICMJE) recommends, as criteria for authorship, that researchers participate in four stages of the research process, namely, conception of the research or collection/analysis of data, drafting or revision of the research, approval of the version to be published, and accountability for the research and its integrity. In addition, it states that many journals around the world follow the ICMJE Recommendations to maintain the quality of medical research.[42]

✳ The French Office for Research Integrity conducts various activities to promote research integrity domestically. Moreover, it offers a clear definition of the roles of researcher integrity officers in France and discloses information on research integrity officers, etc., at various universities and research institutions.[43]

---

40 American Statistical Association.(2016). Ethical guidelines for statistical practice. https://www.amstat.org/ASA/Your-Career/Ethical-Guidelines-for-Statistical-Practice.aspx.(accessed 2022-02-10)

41 Wiley.(2020). Best practice guidelines on research integrity and publishing ethics. https://authorservices.wiley.com/ethics-guidelines/index.html(accessed 2022-02-10)

42 International Committee of Medical Journal Editors.(2019). Recommendations for the conduct, reporting, editing, and publication of scholarly work in medical journals. http://www.icmje.org/recommendations/ (accessed 2022-02-10)
International Committee of Medical Journal Editors.(2021). Journals stating that they follow the ICMJE Recommendations. http://www.icmje.org/journals-following-the-icmje-recommendations/ (accessed 2022-02-10)

43 French Office for Research Integrity.(2021). List of signatories of the charters and of research integrity officers.(2021). https://www.hceres.fr/fr/liste-des-signataires-des-chartes-et-des-referents-integrite-scientifique(accessed 2022-02-10)

3

Dealing with Research Misconduct

Related basic principles

Honesty

Capacity for Implementation

Transparency

Fairness, Diversity, and Inclusion

Stewardship

3 Dealing with Research Misconduct

☐ Are the behaviors that constitute research misconduct clearly defined in the rules of the research institution?

☐ Are the behaviors that constitute questionable research practice, a type of research misconduct, clearly defined in the rules of the research institution?

☐ Are the decision-making processes for dealing with allegations of research misconduct clearly defined in the rules of the research institution?

☐ Does the research institution examine and consider systems of cooperation, which may involve superiors, colleagues, or specialists who can be consulted, that can be used when the person in charge of dealing with allegations of research misconduct is unable to do so?

☐ Has the research institution established a governance system, including definitions of responsibilities and authorities, for investigating allegations of research misconduct, and does it disclose this information to members?

☐ Are the procedures for investigating and dealing with research misconduct transparent to both those in charge of conducting the investigation and the complainant and respondent?

☐ Are investigation procedures conducted with due respect and consideration to protect the positions of the complainant and respondent, and any witnesses or others involved?

☐ Do the members or others involved in research misconduct investigation committees understand what needs to be done in terms of governance, and are there any points to be considering regarding research integrity?

☐ When investigating research misconduct, do investigation committees adhere to any rules stipulated by the research institution or funding sponsors on the implementation and reporting of misconduct investigations?

☐ Are staff in charge of investigations into research misconduct and members of the investigation committee required to consider and disclose potential conflicts of interest that might arise with the complainant and /or the respondent?

☐ Do those involved in investigations into research misconduct and members of the investigation committee strive to maintain confidentiality with regard to any information that comes to light during investigations?

☐ Has the research institution defined suitable rules, procedures, and formats of disclosing the results of investigations into research misconduct?

☐ Are issues related to the methods of conducting research misconduct investigations and managing the committees shared among members, within the boundaries of confidentiality?

Action Plan

► The specific behaviors that constitute research misconduct should be specified clearly in the rules of a research institution. In the Japanese guidelines, the specific behaviors considered research misconduct are falsification, fabrication, and plagiarism (FFP) of data, survey results, etc., from the research findings of other researchers. In addition to these, it is important to specify the extent whereto other questionable research practices, such as self-plagiarism, duplicate publication, and inappropriate authorship, are to be included in the definition.

► To prepare for instances wherein it is difficult to deal with or judge research misconduct, those involved should build cooperative relationships with people whom they can consult within the research institution. This is because although basic definitions and criteria for FFP exist, it is difficult to deal with all kinds of allegations uniformly, given the diversity of research activities and findings. Therefore, within the boundaries of confidentiality, efforts should be made to share past examples of research misconduct within the research institution and enhance the understanding of those involved in investigations.

► It is irresponsible for a research institution to neglect to deal with allegations of research misconduct. Allegations should be dealt with flexibly, on a case-by-case basis, as it is also possible that allegations may infringe on rules other than those concerning research misconduct. However, this does not necessarily mean that the punishment imposed should be more severe. Furthermore, where the alleged behavior constitutes an offense other than research misconduct, this should be reported to the relevant department or officer.

► Where ethical concerns arise, the opinions of others should be sought instead of making a decision individually. Most cases of research misconduct are not so clear-cut. Gray areas frequently exist, with discrepancies between routine behavior in a particular academic field or system and the stipulated guidelines. The research integrity officer should first deal with the case in accordance with the decision-making process stipulated in the rules. Then, where necessary, they should seek advice from trustworthy colleagues with expertise in the area. Next, they should fully consider issues of confidentiality regarding the allegations as well as the privacy of the complainant and respondent. Where a specialist or designated office for research integrity is in place within the research institution, that person or office should be contacted. It is essential to build trust relationships well before a case of research misconduct occurs.

► A data analysis department should be set up in the research institution to enable members to consult a specialist regarding aspects of their research related to statistical analysis. This will not only facilitate investigations into research misconduct but also play a role in supporting the work of

researchers. This will help prevent research misconduct because of statistical incompetency, as, when performing statistical analysis on research data, researchers may unintentionally conduct processes inappropriately due to the lack of knowledge.

► People who are in a position that affords them ready access to information on cases of research misconduct, such as those who are actively involved in research integrity activities and research support providers, should actively disseminate that information to members of the research institution. Methods include sending out emails about lessons learned from cases at other research institutions or using these as materials in internal training or briefing events. (It is also useful to divide these approaches into retroactive approaches and proactive approaches when working to raise awareness of research integrity among members.) In addition, regular reminders should be sent out about the e-learning sessions that members are required to attend.

► Whistleblowers may find it difficult to share frank opinions because reporting someone's misconduct might also affect relationships between researchers and staff. Members may fear retaliation if reports or allegations are traced back to them by their colleagues. The research institution should put in place methods that have lower psychological barriers than regular reporting and consultation channels do, to ensure that whistleblowers can report problems with peace of mind even when it is difficult to do so (e.g. an anonymous online reporting system). The research institution should ensure that any internal whistleblowers who make allegations in good faith are protected from retaliation.

► The research institution should establish a governance system while referring to standards stipulated by the government and funding sponsors; this system should also be disclosed both within and outside the organization. Information should be made available regarding the points of contact for allegations of research misconduct and consultation prior to whistleblowing, the responsibilities and authorities of the departments involved, and the system of collaboration. For example, it would be possible to establish a system, wherein, if the claimant decides to make an allegation in the course of discussions with the consultant, information is passed on, where necessary, from the consultant to the department responsible for dealing with allegations.

► Allegations or consultations may also be made by people external to the research institution. Accordingly, it is recommended that information about the governance system for research misconduct not be confined to the internal web pages but be made available to people outside the organization on a public-facing website. Ultimately, transparency in disclosing information will serve to demonstrate the research institution's honest and forthright approach.

► Websites are a medium that provides information to people who are actively looking for it. Posters and other documents should be displayed within the organization to acquaint all members with

information on research integrity and that on questions and concerns raised during consultations. The goal of doing so is to create more opportunities for members of the research institution to come into contact with information related to research integrity on a daily basis and thereby cultivate a good research climate.

► Those in charge of handling allegations of research misconduct should possess the appropriate skills and be familiar with the role that this position plays in the organization. In some research institutions, few allegations of research misconduct are made, and both the research institution and the person in charge of investigations have limited experience with misconduct investigations. To make up for this lack of experience, it is desirable that those in charge be actively involved in building governance and establishing manuals or standard operating procedures governing how the investigation committee will operate. If such opportunities are not available, it is important that personnel who could potentially be in charge of these issues acquire knowledge and understanding of relevant guidelines and regulations; therefore, the departments in charge in the research institution should actively put in place training to meet this need. This can help prevent situations where the person in charge handles the matter inappropriately because of the lack of experience. Moreover, these manuals and procedures should be continually reviewed and revised with reference to records of actual investigations.

► It is crucial that those who are responsible for conducting investigations into research misconduct correspond and interact with the departments that handle research misconduct when carrying out investigations. They should also liaise with research misconduct investigators in other research institutions if researchers from multiple institutions are involved in the alleged misconduct.

► As the investigation process might have a significant impact on the lives of those involved, the investigation should be carried out in an objective and transparent manner and in accordance with the rules and confidentiality requirements. The basic operating policies and principles must not be distorted by the subjective views of the investigators or committee members. In addition, until the results of the research misconduct investigation are finalized, the contents related to it should be in confidence.

► The manner wherein research misconduct is dealt with is extremely important and can affect the lives and careers of researchers (not only the respondent but also the members of their laboratory) as well as the reputation of the organization. It is therefore important to accumulate experience as a research institution so as to avoid unclear results; handling manuals of research misconduct investigation and examples of research misconduct should be updated periodically and passed down to successors. For some research institutions, research misconduct may not be a problem that occurs frequently. It is possible that one will not experience cases of research misconduct during their time

involved in related duties. One should consider holding consultations with more experienced institutions with regard to methods of dealing with research misconduct.

► When scrutinizing allegations, it is important not to take everything the complainant says at face value. Allegations should be judged in a scientific manner, with reference to the details of the research conducted. When conducting investigations into research misconduct, there may be pressures from various departments and people within the research institution. Accordingly, members in vulnerable positions should not be required to carry out investigations without help from senior members. Moreover, the research misconduct investigator or members of the investigation committee should determine, regardless of their career or position, whether they have any conflicts of interest with the problematic research or researchers. Where a conflict of interest is suspected, it is important to disclose this and step aside from the role to ensure transparency of investigation.

► Scientifically-grounded allegations regarding research integrity made by people in vulnerable positions (e.g., students) should be supported. To prevent undue retaliation against such parties, appropriate protection should be provided in accordance with the whistleblower protection rules set up by the research institution.

► The research misconduct investigation committee should include several specialists with expertise in the field of research about which allegations were made and ensure that the investigation suitably reflects the realities of the research field in question. However, depending on the rules of the research institution and the members who constitute the research misconduct investigation committee, similar allegations may lead to different results in terms of whether research misconduct is found to have occurred. Nevertheless, the criteria for deciding whether an act constitutes research misconduct should be scientific and based on the "preponderance of evidence" standard. Depending on the severity of the research misconduct, confirmation beyond the rules of the research institution may be required.

► The sanctions to be taken at an institutional level once research misconduct has been confirmed may vary in consideration of the researcher's level of expertise, e.g., whether they are a student or a professor. However, the decision about whether the act does or does not constitute research misconduct should be made impartially, based on evidence.

► It is important to secure opportunities for both the complainant and respondent to appeal the decision. It is through this opportunity, to which both parties have a legitimate right, that the decision on whether research misconduct has occurred is finalized.

▶ In addition to the rules of the research institution, the results of the investigation should consider any rules of funding sponsors regarding the act of research misconduct in question and should be as publicly transparent as possible. This will also demonstrate to external parties that the organization has dealt with the matter in an objective manner. However, caution should be exercised with regard to identifying individual researchers, and this may involve taking steps to protect them from any reputational damage or social sanctions.

▶ As allegations of research misconduct may not always center on academic or research-based issues, information on such matters should be shared within the research institution. For instance, allegations may result from interpersonal issues or attempts to act in bad faith against the respondent, and the complainant may make repeated allegations without scientific proof. Guidelines, such as those issued by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), contain rules that penalize the complainant who act in bad faith.

▶ Once the research misconduct investigation is concluded, regardless of the decision, those involved in the investigation should confirm whether there were any problems with the internal governance system, the deployment of personnel in charge, the rules of the research institution, or the content of training on RCR, and improve any internal systems where necessary.

Case Studies

* A survey with participants at the World Conference on Research Integrity revealed that while acts of FFP constitute major research misconduct, they are less likely to occur, and it is therefore important to focus on addressing "questionable research practices" (QRPs).[44,45]

* There are also certain research institutions where, in addition to FFP, duplicate submission and authorship issues are classified as research misconduct. Moreover, in recent years, research misconduct when dealing with statistics (p-hacking or HARKing [Hypothesizing After the Results are Known]) has been reported in the same vein as fabrication and falsification. Statistical research misconduct, which was previously considered a QRP, is now being classed as a detrimental research practice (DRP) in certain contexts.[46] This kind of misconduct involves selecting data that are likely to produce significant differences, changing the statistical method,

---

44 Bouter, L.M., Tijdink, J., Axelsen, N. et al. (2016) Ranking major and minor research misbehaviors: results from a survey among participants of four World Conferences on Research Integrity. *Research Integrity and Peer Review* 1, 17. https://doi.org/10.1186/s41073-016-0024-5

45 Haven, T., Tijdink, J., Pasman, H.R. et al. (2019) Researchers' perceptions of research misbehaviours: a mixed methods study among academic researchers in Amsterdam. *Research Integrity and Peer Review* 4, 25. https://doi.org/10.1186/s41073-019-0081-7

46 National Academies of Sciences, Engineering, and Medicine (2017) Fostering Integrity in Research. Washington, DC: The National Academies Press. https://doi.org/10.17226/21896.

or hypothesizing on the basis of known results (feigning that the hypothesis was confirmed). This results in the creation of false positives and hinders the reproducibility of the research results. To prevent such statistical misconduct, there have been attempts in fields such as biomedical sciences and psychology, which frequently employ statistical methods of analysis, to require researchers to register the hypotheses to be tested, sample sizes, and statistical methods to be applied before they submit their papers (known as "preregistration"). Outside Japan, a website called the Open Science Framework is widely used.[47]

✱ In Japan, GakuNin RDM was introduced in February 2021 as a platform for managing research data across multiple research projects. Since research data is managed centrally in this service, it also has the effect of preventing research misconduct. If the research institution is unable to prepare its own data server, it may be advisable to consider using a service such as GakuNin RDM.[48]

✱ In recent years, research that attempt to narrow the gap between RCR and academic activities that involve artistic or creative endeavors has been published.[49] Particularly noteworthy in this regard is the question of where to draw the line between "misappropriation" and the specific creative acts of "paying homage" or "imitation" in artistic endeavors. In such fields, non-specialists might find it difficult to draw this distinction, and even experts can have a difficult time distinguishing between a copyright violation and fair use (work can be used without the permission of the copyright holder if certain criteria are fulfilled). Therefore, in cases where research misconduct is brought to attention in such fields, it is important to include experts in the investigation committee who can explain the established norms and practices of the field and provide appropriate guidance.

✱ In research institutions in the United States, a Research Integrity Officer (RIO) is employed to not only deal with allegations of research misconduct but also provide routine consultation services to researchers and students.[50]

✱ Duke University in the United States paid 112.5 million US dollars to settle research misconduct allegations under the False Claims Act, in relation to multiple acts of research

---

47 Open Science Framework, https://osf.io/ (accessed 2022-02-10)
48 GakuNin RDM, https://rdm.nii.ac.jp/ (accessed 2022-02-10)
49 Noury, C., Cloutier, M. and Roy, M.-C.(2018). Toolkit for RCRC: Summary of Issues in Responsible Conduct in Research-Creation and Proposed Tools for Reflection. Montréal, Québec: Research Project on Responsible Conduct in Research-Creation: Providing Creative Tools to Meet the Challenges of an Emerging Field. http://hdl.handle.net/1866/20924 (accessed 2022-02-10)
50 In the United States, RIOs are deployed at each research institution, as mandated by federal law. A handbook for officials (RIOs, institutional administrators, investigation committee members, etc.) who are responsible for dealing with allegations of misconduct in research supported by funding from the Public Health Service (PHS), is available on the Office of Research Integrity website. https://ori.hhs.gov/rio-handbook (accessed 2022-02-10)

misconduct that occurred at the university. Moreover, the university established a new body to oversee research promotion policy throughout the organization（liaison and coordination with federal agencies, promotion of compliance training, promotion of research integrity, etc.）.[51]

＊　There have been cases where routine operations or other investigations at an institution are affected by the need to continually handle anonymous allegations made in bad faith. To solve this problem, the possibility of establishing "safe harbors"（where an action will not be deemed to contravene the rules, provided it occurs in accordance with certain predefined rules）or criteria whereunder allegations are not accepted has also been raised.[52]

51　Office of Public Affairs, U.S. Department of Justice.（2019, March 25）. Duke University agrees to pay U.S. $112.5 million to settle false claims act allegations related to scientific research misconduct. Office of Public Affairs, U.S. Department of Justice. https://www. justice.gov/opa/pr/duke-university-agrees-pay-us-1125-million-settle-false-claims-act-allegations-related（accessed 2022-02-10）
52　League of European Research Universities（2020）Towards a Research Integrity Culture at Universities: From Recommendations to Implementation, LERU, p. 17-18.

4

Establishing Committees to Review Research Ethics

Related basic principles

Capacity for Implementation
Transparency
Fairness, Diversity, and Inclusion
Stewardship

4 Establishing Committees to Review Research Ethics

☐ Are the rules, scope of review, content for which application is required, review procedures, and review schedule of each research ethics review committee in the research institution clearly stated?

☐ Does the ethics review committee for human subject research conduct checks to ensure that research involving human subjects, samples or data collected from human subjects, and personal data comply with domestic and international legal and ethical requirements and other applicable guidelines?

☐ Does the ethics review committee for animal-related research conduct checks to ensure that research involving animal testing complies with domestic and international legal and ethical requirements and other applicable guidelines?

☐ Does each ethics review committee conduct checks to ensure that systems are in place that comply with domestic and international legal and ethical requirements and other applicable guidelines when conducting research involving potential danger or harmful substances or research that might pose a danger to the environment?

☐ Is there a system in place in the research institution through which researchers can notify relevant government ministries and agencies and local authorities when carrying out surveys or research in the field?

☐ Is research to be reviewed by the ethics review committees considered and sorted in advance, including confirmation of whether certain reviews are required?

☐ Is position-specific training provided to ensure that internal and external members of research ethics review committees and administrative personnel understand the procedures and rules for committee management?

☐ Are there procedures in place to disclose conflicts of interest that members of research ethics committees might have?

☐ Do those involved in managing the ethics committees share issues regarding methods of conducting research misconduct investigations and managing committees with other committee members, within the boundaries of confidentiality?

Action Plan

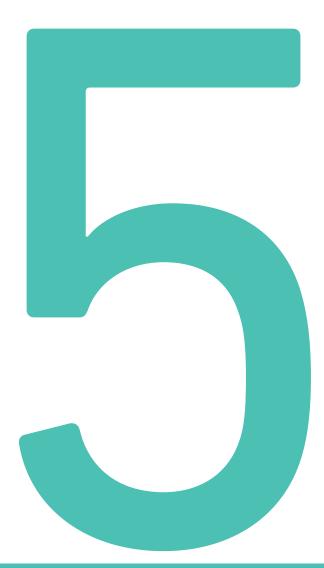► Systems for carrying out the necessary research ethics review should be put in place for all research conducted in the research institution. In Japan, there are clear ethical rules, guidelines, and regulations for conducting research on human subjects and animals in the fields of medicine and life sciences. Therefore, in almost all cases, the systems and necessary procedures for research ethics

reviews are already in place for conducting research in these fields. However, outside of these fields, some research institutions have not yet established rules or systems for ethical review. For example, in the humanities and social sciences, studies that require participants' cooperation, such as interviews, must obtain the approval of the research ethics review committee upon confirmation of any applicable rules and regulations. There are also cases wherein journals publishing research findings confirm whether a review took place before the research work was conducted, either through their rules or in peer review comments. Therefore, the absence of rules or an ethics review committee in the affiliated institution does not mean that there is no need for a review. There are researchers who realize the need for an ethical review because they are asked by participants whether the study has cleared an ethical review after an interview or questionnaire has been conducted. What is problematic in research ethics depends on the themes addressed in the study in question, as well as cultural factors. It is important to keep in mind the need to deal with ethical issues in a way that goes beyond the existing rules of the research institution.

► Research ethics committees should clearly define the scope of content wherefor reviews are required along with their review procedures and communicate this information to researchers. Research ethics review is not a process designed to highlight flaws in a research project and prevent the implementation of research but a procedure intended to ensure the objectivity and transparency of research and provide a channel through which information can be shared between the research institution and researchers. Research institutions should promote the understanding that ethics review is a process for the institution and researchers to engage in discussion so that research can proceed without problems in compliance with the relevant rules and regulations.

► There is a need to define both the circumstances in which research ethics reviews are required and those in which they are not. The research institution should develop systems that do not obstruct researchers from presenting their research findings, which might include issuing documentation to certify that an ethics review was not necessary if a researcher is asked to demonstrate whether ethical dimensions have been addressed when presenting findings at academic conferences or submitting articles to journals.

► In recent years, with more opportunities to engage in interdisciplinary research, it would be ideal to take a more flexible approach toward determining whether reviews are necessary, rather than sticking rigidly to established procedures. It is important to conduct reviews at the request of researchers even if this is not covered in the rules. There are also cases where the specializations of researchers differ from those of the affiliated institution. For example, a researcher of medical and life sciences who belongs to a research institution specializing in the humanities and social sciences might wish to conduct research on human subjects working in medical and life sciences. If a research institution does not have in place a system for reviewing that kind of research, the research

work would not satisfy the necessary rules and could not be conducted. If, even in such cases, the institution does not set up a research ethics committee, then the rules should clearly state that it is acceptable to undergo ethics review at the level of whole institution or another institution.

► Research ethics review committees should verify that there are no issues with the proposed research work in light of any relevant rules or guidelines. Committees should also assess the suitability of the research method, ways in which to manage progress, how to protection of research subjects, ways of preempting potential conflicts of interest, and the appropriateness of research data management. Moreover, in the case of international collaborative research, committees should confirm that the work does not contravene any rules regarding security export control. The contact information of any personnel available for consultations on each part of the research process should be made available to all in order to ensure that applicants can receive guidance and determine whether an ethics review is necessary.

► To obviate re-assessment of projects due to errors in applications, detailed examples of research plans should be provided beforehand to prevent omissions. In addition to specifying the rules for the review process, it is important to provide flowcharts and checklists to facilitate preliminary discussions on any precautions to be taken when preparing research proposals to ensure that the review process runs smoothly, and whether an ethics review is necessary in the first place.

5

Initiatives for Appropriate Management of Research Data

Honesty
Capacity for Implementation
Transparency
Stewardship

5 Initiatives for Appropriate Management of Research Data

☐ Does the research institution inform researchers about their obligation to comply with the rules of the institution itself and of funding sponsors in terms of how the outcomes of research and research data are handled?

☐ Has the research institution included rules for protecting and managing the use and ownership of research data under intellectual property rights in collaborative research agreements related to research findings?

☐ Do the research institution's research ethics review committees verify that consent documents for participation in experiments include provisions on how research findings will be handled?

☐ Does the research institution inform its students, faculty, and researchers of internal rules on the ownership and management of research data?

☐ Does the research institution inform researchers of the types of research data that should not be openly shared to protect research subjects or for other reasons?

☐ Does the research institution inform researchers of any rules for managing research data stipulated by funding organizations or academic associations?

☐ Does the research institution implement measures to encourage researchers to ensure reproducibility, traceability, and accountability in their research, such as providing infrastructure for maintaining and managing research data in an objective manner?

Action Plan

► The research institution should ensure that researchers store data securely during the period stipulated in the rules governing research data. Research records provide important evidence to prove that the research has been carried out in a fair and honest manner. Deliberate disposal of such records constitutes a questionable research practice (QRP). Moreover, in cases where the research institution provides the necessary infrastructure and it is permitted by the rules of the institution or funding sponsor and any agreements on collaborative research, research data used for the submission of academic articles should be stored in a data repository of a public agency (J-STAGE Data), in addition to the institution's own data repository, to ensure the transparency of research.

► In recent years, universities have established venture corporations, which researchers sometimes play a role in operating. When such circumstances arise, care must be taken to clearly delineate the boundaries between data acquired from the university's research and data acquired from the corporation's research; issues related to potential conflicts of interest should also be managed by the

research institution.

► The extent and way that conflicts of interest are to be disclosed should be specified in the rules of the institution. Conflicts of interest are managed not because of a moral or ethical failing on the part of the faculty member. Rather, this is done to fulfil the responsibility of the research institution to serve as a steward of public funds. The organization should endeavor to ensure that members understand this while putting in place mechanisms, such as a conflict of interest committee, to manage conflicts of interest in an objective manner.

► When the stipulated period for data retention has expired or when research data are going to be disposed of for legal or ethical reasons, the research data should be deleted or disposed of with the confirmation of the relevant parties, paying particular attention to confidentiality and security. However, there are certain situations where it becomes necessary to refer to past research data, when allegations of research misconduct arise at a later date, or records of past research are reappraised as valuable findings. Members should therefore be aware that there is no need to dispose of data in cases where it can be stored electronically without contravening the rules of the research institution or any legal or ethical restrictions. In this case, members should be instructed to carefully ensure that saved files are periodically updated or moved, while considering the possibility that electronic data may not be recoverable because of changes or updates to memory systems or standards.

► Infrastructure should be provided to enable researchers to store and record research data and findings obtained through their work. Appropriately managed data are useful as evidence in the investigations that take place when research misconduct issues arise.

► The research institution should establish a research support center to provide consultation services on the statistical processing of research data and study design to assist researchers in ensuring reproducibility of research; information regarding the activities and scope of support provided by the center should also be shared.

► The research institution should keep access to data open wherever possible and close off access only if necessary. Where appropriate, it should adhere to the FAIR principles of data management (that data should be findable, accessible, interoperable, and reusable).[53]

---

53 Wilkinson, M.D. et al.(2016)The FAIR Guiding Principles for scientific data management and stewardship. https://doi.org/10.1038/sdata.2016.18

Case Studies

* Nanyang Technological University (NTU), Singapore, adopted an open access policy in 2011 and is working at the institutional level to manage research data obtained by relevant parties in the university. All NTU faculty members are required to submit any peer-reviewed submissions or publications to a digital repository managed by the university library (DR-NTU).[54]

* PLOS journals require primary authors to unconditionally disclose all research data needed to replicate their findings at the time of article publication. If data cannot be made publicly available due to specific legal or ethical restrictions, primary authors are required to provide an explanation regarding data availability[55].

* Through its Data Champion program, the University of Cambridge provides a shared platform for open research so that data from research conducted by university members (PhD students, researchers, data managers, librarians, etc.) can be used in collaborative research conducted within and outside the university.[56]

* The British National Institute for Health Research's policy on clinical trial research stipulates that findings from clinical trials should be published in a peer-reviewed journal or platform within 24 months of study completion.[57]

* At the University of Oxford, an initiative called Reproducible Research Oxford (RROx) was set up as a local network of the UK Reproducibility Network (UKRN). The initiative deals with research reproducibility issues across all academic disciplines.[58] RROx was established in January 2020 with support from the John Fell Fund. In a similar initiative, the University of Zurich set up a specialized center with the mission of training the next generation of researchers to implement reproducible research.[59]

* The Dutch Research Council (NWO) provides research grants to encourage researchers to engage in replication studies.[60]

54　Nanyang Technological University.(n.d.)Digital Repository of NTU. https://dr.ntu.edu.sg/ (accessed 2022-02-10)

55　PLOS ONE.(2019). Data Availability. https://journals.plos.org/plosone/s/data-availability(accessed 2022-02-10)

56　University of Cambridge.(n.d.)Data champions. https://www.data.cam.ac.uk/intro-data-champions(accessed 2022-02-10)

57　National Institute for Health Research, Department of Health & Social Welfare, United Kingdom.(2019). NIHR policy on clinical trial registration and disclosure of results. https://www.nihr.ac.uk/documents/nihr-policy-on-clinical-trial-registration-and-disclosure-of-results/12252(accessed 2022-02-10)

58　Reproducible Research Oxford, https://ox.ukrn.org(accessed 2022-02-10)

59　CENTER FOR REPRODUCIBLE SCIENCE(CRS)https://www.crs.uzh.ch/en.html(accessed 2022-02-10)

60　NWO Research programmes, Replication Studies https://www.nwo.nl/en/researchprogrammes/replication-studies(accessed 2022-02-10)

✳ In the United States, the Center for Open Science (COS) was set up to develop and promote environments that facilitate open access to research findings.[61]

✳ In Europe, the Innovative Medicines Initiative was established with the objective of increasing the speed at which medical products are developed. It funds a project called the European Quality In Preclinical Data (EQIPD) to manage preclinical experimental data.[62]

✳ Also in Europe, there is a project called Standard Operating Procedures for Research Integrity (SOPs4RI), which aims to promote excellent research and research integrity in alignment with the European Code of Conduct for Research Integrity.[63] SOPs4RI is presented as a "toolbox" and provides a database of teaching materials and guidelines from various European countries.

✳ The Committee on Publication Ethics (COPE), a nonprofit organization, provides opportunities for editors and publishers to share opinions pertinent to addressing ethical issues related to research and its publication for the benefit of the public. In the latest COPE Strategic Plan (2020–2023), strategic priorities are set out to promote scholarly integrity through efforts to tackle ethical issues in these areas.[64]

---

61 Center for Open Science, https://cos.io/ （accessed 2022-02-10）

62 Innovative Medicine Initiative, European Quality In Preclinical Data, https://www.imi.europa.eu/projects-results/project-factsheets/eqipd（accessed 2022-02-10）

63 Standard Operating Procedures for Research Integrity, https://www.sops4ri.eu/ （accessed 2022-02-10）

64 COPE.（2020）. COPE's strategic plan for 2020–2023. https://publicationethics.org/files/cope-strategic-plan-2020-23_0.pdf（accessed 2022-02-10）

6

Providing Opportunities for Education on Responsible Conduct of Research (RCR)

Related basic principles

Capacity for Implementation

Respect

Fairness, Diversity, and Inclusion

6 Providing Opportunities for Education on Responsible Conduct of Research （RCR）

☐ Does the research institution provide opportunities to learn about RCR tailored to the positions of members involved in research activities and their experience levels?

☐ Are learning opportunities on RCR provided where necessary not only for members of the research institution but also for other personnel involved in research activities, such as external research collaborators or dispatched staff?

☐ Does the research institution conduct initiatives that integrate both compliance and voluntary RCR activities?

☐ Does the research institution appoint a person competent to promote and oversee RCR?

☐ Do those in charge of RCR education in the research institution have opportunities to receive regular training and professional development?

☐ Does the research institution adhere to any relevant funding sponsor rules when providing training in RCR?

Action Plan

► First, it is important to ensure that there is a common understanding among members of the research institution that RCR training is conducted not merely from the perspective of preventing research misconduct but to enhance the quality of research activities. The research institution should provide the infrastructure to enable all members of the organization, from students to the president of the university, including technicians and project managers as well as researchers, to undertake outreach and education on RCR. Moreover, everyone in the organization should be encouraged to perceive themselves as a member of a community that should support research activities. Further to this, in the event that unaffiliated research collaborators or research collaborators from other institutions are requested to undertake work that is materially related to research activities, they should be treated in a similar manner to members of the research institution.

► If training in RCR is to be provided through e-learning or in person, the instructor should examine whether the content of the training is appropriate for the specialized fields, positions, and levels of the participants. It is also useful to find out more about the target participants beforehand to understand their needs and what they hope to learn, instead of presenting a uniform program of training for all audiences in a one-size-fits-all approach. If the target audience is involved in the training from the design stage, this can not only boost the participation rate but also promote a more thorough understanding of the training content. Rather than simply conducting e-learning or

distributing booklets, it will be more effective to provide opportunities for participants to deepen and reinforce their knowledge through discussions. If it is difficult to arrange such a diverse range of training, it may be a good idea to provide members with information about seminars and study groups organized by public agencies and other organizations and actively encourage them to participate in such events.

► If research support providers without research experience or knowledge are in charge of implementing RCR training, they may be unable to judge the suitability of the training content. In that case, research support providers should consult with researchers or specialists who possess the knowledge necessary to judge whether the content is suitable. It is also desirable to review the training content periodically on the basis of feedback from participants.

► Members affiliated with multiple research institutions may be asked to undergo identical or similar e-learning programs by each of the affiliated institutions. In such cases, it may be necessary to take steps to prevent members from having to undergo training multiple times, provided the criteria of the research institution and any funding sponsors are fulfilled. This might involve sharing the requirements for completion of training or recognizing completion certificates obtained from one research institution as valid in other institutions. In relation to this, if RCR training is overloaded on members of the institution all at once, their motivation might fall. As an alternative, training could be implemented gradually and continuously, at regular intervals, to help update the required knowledge and awareness of RCR. For instance, in the case of e-learning, participation in stages could be encouraged, enabling members to complete a course over multiple years, or confirmatory "digest" versions could be provided to participants who are retaking a course.

► Another component of RCR, in addition to research ethics and integrity, is adherence to compliance rules (handling of public funding, conflicts of interest, security export control, etc.). By reminding members of the need for these rules as an integral whole, in terms of managing overall risk throughout the research process, awareness can be improved not only among researchers but also among research support providers who are involved in compliance procedures.

► There may be cases where budget or human resource constraints prevent the research institution from employing RCR experts. In this case, existing researchers can be assigned to serve as consultants in each department or nominated to fulfill these roles as part of their assigned duties. At this point, it is important to allocate the most suitable person to take on this role as this will help improve the level of awareness throughout the organization as a whole. When existing researchers may be assigned to take on the instructor role in lectures on RCR, or to take charge of instruction in laboratories or seminar classes, placing researchers in a position in which they are required to teach the issues will help enhance their levels of awareness of RCR. It is also important to link these

activities in the research institution to the evaluation of researchers and staff. Now, some institutions outside Japan employ Research Integrity Advisors and/or research integrity officers. Depending on the size of the institution, such efforts to develop specialized personnel may also be conducive to cultivating a healthy research climate in the research institution.

► In Japan, an institution can request cooperation in RCR training and activities from external specialists. When doing so, the content of the training sought by the research institution should be shared in advance, and steps should be taken to ensure that the content delivered is beneficial to the participants. Confidentiality issues, which are more likely to arise when multiple organizations are involved, must also be addressed.

► For refreshing members' knowledge of RCR, the institution may find it beneficial to have an external instructor provide the training even if there are internal experts, as this may result in a wider range of opinions and feedback. Within the organization itself, interactions among researchers and students across the boundaries of their respective laboratories can play a positive role in detecting problems and sharing information.

Case Studies

* At the Fred Hutchinson Cancer Research Center in the United States, support in the form of counseling and coaching is provided to reduce stress and time pressure. In addition, the center provides students and faculty with information and support services offered by the Office of Research Integrity, including support with research proposals and programs set up to tackle harassment and discrimination.[65]

* The University of Southern Maine in the United States developed a training program in research ethics and research integrity rooted in principles of cognitive psychology. The approach is based on the idea that most researchers want to behave ethically, but internal and external pressures can sometimes cause them to make poor choices. This model is designed to identify and directly address the cognitive shortcomings of decision-making under stress and to provide metacognitive tools with which to avoid pitfalls.[66]

* The Royal Society in the United Kingdom compiles interviews with various researchers and publishes them as a collection of "Career Case Studies." This provides an opportunity for

---

65 Fred Hutchinson Cancer Research Center, Office of Scientific Career Development, https://www.fredhutch.org/en/research/education-training/office-of-scientific-career-development.html（accessed 2022-02-10）
66 Maine Regulatory Training and Ethics Center（MeRTEC）, https://www.mertec.org/about.html（accessed 2022-02-10）

researchers to know more about others from outside of their own research field. Thus, researchers are encouraged to explore what it means to be a successful researcher from a different perspective and to consider what kind of skills and achievements should be commended.[67]

* In 2021, the Berlin Institute of Health in Germany and the University of Oxford in the United Kingdom held the Oxford | Berlin Summer School on Open Research. During this four-day summer school, a series of lectures and workshops were held on topics such as biases in research, reproducibility, research publication, and research ethics. The program also featured programming workshops on languages such as R and Python.[68]

* At Charité, a university hospital in Berlin, an upskilling course is provided to those who teach RCR.[69] However, this is a voluntary initiative introduced by the research institution itself. According to a report, in Germany, neither the government nor funding sponsors require universities to teach RCR, which is entrusted by the university to professors and other faculty. Moreover, there are no specific RCR courses for university professors, other than training at the time of hiring or promotion and institution-wide training because instructors are trusted to have already developed an awareness of RCR during the course of their career. This also reflects the high social standing of university professors in Germany.[70]

* The Erasmus Rotterdam University in the Netherlands developed an application called "Dilemma Game," which allows users to learn about attitudes toward research integrity and other research issues through case studies.[71]

* The Office of Research Integrity within the US Department of Health and Human Services provides materials on RCR designed for administrative staff. Although the regulations envisaged are specific to the context of the United States, the basic principles of RCR articulated in the materials would apply universally to all countries.[72]

---

67 The Royal Society, Case studies, https://royalsociety.org/topics-policy/projects/research-culture/changing-expectations/career-case-studies/ (accessed 2022-02-10)
68 Berlin Institute of Health.(2021). Oxford | Berlin Summer School on Open Research. https://www.bihealth.org/en/translation/innovation-enabler/quest-center/mission-approaches/education/oxford-berlin-summer-school-on-open-research-2021-in-englisch (accessed 2022-02-10)
69 Charité, Qualifizierungsprogramm für Lehrende, https://dsfz.charite.de/hochschuldidaktik/qualifizierungsprogramm_fuer_lehrende/ (accessed 2022-02-10)
70 Ministry of Education, Culture, Sports, Science, and Technology(MEXT), "Report on the Findings of the Survey and Analysis of Standards in Research Ethics Education Content in Foreign Countries – March, 2020" https://www.mext.go.jp/a_menu/jinzai/fusei/1418732_00001.htm(accessed 2022-02-10)
71 Erasmus University Rotterdam, Dilemma Game, https://www.eur.nl/en/about-eur/policy-and-regulations/integrity/research-integrity/dilemma-game(accessed 2022-02-10)

✳ In Europe, there is an initiative called the "Embassy of Good Science." Developed within the "EnTIRE" and "VIRT2UE" projects, the platform has received funding from Horizon 2020, which supports research and innovation in the European Union. The initiative includes a database that brings together guidelines on research ethics and integrity from various countries, along with research integrity case studies and training programs.[73]

---

72 Office of Research Integrity, Administrators and the Responsible Conduct of Research,
   https://ori.hhs.gov/education/products/rcradmin/index.html, https://ori.hhs.gov/administrators-and-responsible-conduct-research
   （accessed 2022-02-10）
73 The Embassy of Good Science, https://embassy.science/wiki/Training_Informations（accessed 2022-02-10）

7

Research Guidance and Mentoring for a Good Research Climate

Related basic principles

Respect
Fairness, Diversity, and Inclusion
Stewardship

7 Research Guidance and Mentoring for a Good Research Climate

☐ Does the research institution have a policy that those involved in providing research guidance (hereafter "instructors") should be mindful of the diversity (of cultural backgrounds, life events, able-bodiedness, etc.) of those who receive their guidance (hereafter "students"), while respecting them as independent researchers and allocating sufficient time to their needs?

☐ Do instructors provide opportunities for students to receive advice and consultation on matters other than research activities?

☐ Do instructors keep records of the content and methods of their consultations and the advice they provide?

☐ Does the research institution provide opportunities for students to undergo professional development to help instructors fulfill their roles and responsibilities as an instructor or mentor?

☐ Does the research institution provide opportunities or consulting services through which students or mentees can talk about and solve problems that arise when they receive guidance from instructors or mentors?

☐ Does the research institution permit students to form student or peer support groups where they can support one another and share advice?

☐ Does the research institution provide resources that can help members of the organization develop their careers as researchers?

Action Plan

► The research institution should promote opportunities for multiple instructors and students to consult one another about RCR issues. Through these opportunities, it is important to verify that the methods and content of guidance on RCR provided by instructors or mentors, as well as the approaches and concepts that underpin this guidance, are up to date and aligned with current thinking in the field. Depending on the content, it is possible that some student will be better informed than the instructor will.

► Instructors should consider the backgrounds of their students, as well as the policies of the institution, and make the necessary changes to any local rules and policies that apply within the research laboratory. The research institution should disseminate information on a regular basis to ensure that instructors are aware of the importance of respecting diversity and that this is not merely a policy goal.

► Instructors should arrange consultations with their students and work together with them to establish research plans, content, and goals. If an instructor forces a student to conduct certain research activities or imposes restrictions on what they can do without providing opportunities to talk and share ideas and opinions, it may be regarded as harassment.

► Instructors should make clear that they welcome consultations about any concerns a student may have about RCR issues or other aspects of research. A student is often in a more vulnerable position relative to an instructor and may refrain from asking the instructor to spare time for a meeting. Moreover, an instructor should make clear to students that they are available to offer guidance or advice on matters other than research activities as a guide along the way to becoming a distinguished researcher. It is important that instructor and student work to build mutual understanding both through scheduled meetings and casual day-to-day conversation. Such efforts to form mutually supportive relationships will help cultivate an appropriate research climate in the institution.

► The matters that instructor and student discuss should be shared between the both of them. It is essential that the content of meetings is kept on record in a form that reflects what an instructor and a student agreed upon in their discussion.

► Therefore, a record should be kept about the content of the conversation with a student and the progress of the research project. On occasion, important information may be shared with colleagues in an instructor's research laboratory, but it is important to give due consideration to the privacy of students when doing so. Furthermore, it is important that the content of discussions is shared between instructor and student. If a problem arises between instructor and student, the department in charge of overseeing the guidance process within the research institution may request to see any email exchanges that took place or records of discussions.

► In research areas where there are fewer opportunities for collaborative research, researchers may be less well informed about authorship and the sharing of research data, and it is conceivable that an instructor might use knowledge or materials obtained in the course of providing research guidance to their students without permission. In some cases, it is difficult to draw a clear line between output that is developed collaboratively by instructor and student through research guidance and an act of plagiarism. At the very least, it should be recognized that the structural problem of hierarchical relationship between supervisor and their student and academic harassment can be related to research misconduct.

Case Studies

∗ At University College London, a system called the "UCL Research Student Log" is in place to keep records of meetings with students, and instructors are encouraged to make full use of the system.[74]

∗ At the University of Helsinki, an online tool called "Thessa" is provided to monitor the progress of doctoral dissertation writing. Thessa provides a platform where doctoral candidates can not only record credits earned toward completion of the doctoral degree but also track their participation in academic conferences in relation to the research plan, while enabling the supervisor to confirm this information, provide advice, and arrange research meetings. Further to this, the Thesis Committee monitors the supervision provided, offering advice not only on interactions with doctoral candidates but also on the guidance provided by the supervisors.[75]

---

74 https://researchlog.grad.ucl.ac.uk/ (accessed 2022-02-10)
75 Thessa, "Rights, Obligations and Responsibilities in Doctoral Training at the University of Helsinki"
     https://thessa.helsinki.fi/roar (accessed 2022-02-10)

8

Evaluating Responsible Research Activities

Related basic principles

Capacity for Implementation
Respect
Transparency
Fairness, Diversity, and Inclusion

8 Evaluating Responsible Research Activities

- ☐ Does the research institution evaluate the outcomes of a researcher's activities in a way that reflects the standard practices of the research field?
- ☐ Does the research institution commend researchers for their involvement in nurturing future generations and for being a good mentor?
- ☐ Does the research institution commend researchers for their involvement in its research integrity activities?
- ☐ Does the research institution evaluate the openness and reproducibility of research activities when hiring and promoting researchers?
- ☐ Does the research institution commend researchers and research support providers for their contributions toward cultivating a good research climate?

Action Plan

► When evaluating researchers at the time of hiring and promotion, evaluation criteria that reflect the standard practices of the field wherein a researcher is working should be employed, in addition to quantitative measures such as number of publications and impact factor (IF). Evaluating researchers based only on the number of publications or IF would be disadvantageous to researchers whose academic discipline does not lend itself well to this particular form of evaluation. Thus, steps should be taken to incorporate a diverse range of assessment methods. Furthermore, when using quantitative indicators, care must be taken to ensure that the significance behind the numbers is well understood (e.g., IF does not indicate the quality of a particular research article, but rather an evaluation index of a journal).

► The ways in which researchers are involved in research integrity initiatives within the research institution should be evaluated in a comprehensive manner. If the only evaluation criteria is the number of publications, this may put researchers under pressure and encourage research misconduct in the process of publishing their work.

► Members of the research institution should be evaluated holistically, instead of looking only at research achievements. This might involve assessing participation in internal research ethics review committees, educational activities, social contribution projects, creation of intellectual property, liaison and collaborative research with corporations, and level of participation in university governance. Similar policies should also be applied when hiring faculty and staff from non-academic domains.

► The research institution should commend researchers and research support providers who contribute to the promotion of research integrity. Through these activities, both researchers and research support providers can contribute toward cultivating a good research climate in the institution. Research support providers who are well acquainted with research integrity also play a role in enhancing the overall research capacity of the institution.

Case Studies

∗ In recent years, simplistic use of quantitative indicators to evaluate research has been criticized. In light of the Leiden Manifesto[76] and the San Francisco Declaration on Research Assessment （DORA）[77], the 6th World Conference on Research Integrity held in Hong Kong resulted in the formulation and endorsement of the Hong Kong Principles[78] for assessing researchers. The five Hong Kong Principles are:

Principle 1 : Does the institution value responsible research practices?

Principle 2 : Does the institution value complete reporting of research regardless of the results?

Principle 3 : Does the institution reward the practice of open science?

Principle 4 : Does the institution value replication and the pursuit of innovation in research?

Principle 5 : Does the institution recognize contributions to tasks such as peer review and mentoring?

∗ Canada has adopted a policy of not focusing on the order of author names in authorship indices. When applying for research grants, applicants are not required to enter information regarding the primary authors and coauthors of research publication when using the online platform （Canadian Common CV）.[79]

∗ At Ghent University, Belgium, there is less reliance on bibliometric indicators in the evaluation of researchers and more emphasis on qualitative, holistic assessment. At Katholieke Universiteit Leuven, submission of an autographical sketch is required during evaluation in addition to the

76 Diana Hicks, Paul Wouters, Ludo Waltman, Sarah de Rijcke, Ismael Rafols（2015）Bibliometrics: The Leiden Manifesto for research metrics, *Nature News*, Springer Nature, Apr 22, 2015 https://www.nature.com/news/bibliometrics-the-leiden-manifesto-for-research-metrics-1.17351（accessed 2022-02-10）

77 The Declaration on Research Assessment, San Francisco Declaration on Research Assessment, https://sfdora.org/read/ （accessed 2022-02-10）

78 Moher D, Bouter L, Kleinert S, Glasziou P, Sham MH, Barbour V, et al.（2020）The Hong Kong Principles for assessing researchers: Fostering research integrity. *PLoS Biol* 18（7）: e3000737.
https://doi.org/10.1371/journal.pbio.3000737

79 Simard, Philippe., Massie, Charles., Ieroncig, Fabrice., Demers, Simon-Pierre., & Marquis-Gravel, Guillaume.（2018）. Nuts and bolts of scientific authorship: Doing it right. *Canadian Journal of Cardiology*, 34（4）, 347-348. DOI: https://doi.org/10.1016/j.cjca.2018.02.001

usual list of achievements. At the University of Texas Southwestern Medical Center, researchers are evaluated not only by conventional measures, such as the number of publications, but on a broader range of criteria, including their ability as a mentor and value of past contributions.[80]

* At the University of Hong Kong, awards are presented annually to commend outstanding researchers and research output in the institution. The funding is awarded to these projects not only because of outstanding research outcomes but also as a way of recognizing and commending initiatives by junior and senior researchers and instructors.[81]

---

80 Mejlgaard, N. *et. al.* (2020)Research integrity: nine ways to move from talk to walk, *Nature* 586, 358–360 doi: https://doi.org/10.1038/d41586-020-02847-8

81 HKU Internal Awards for Research Excellence, http://www.rss.hku.hk/honours-awards/internal-awards(accessed 2022-02-10)
The following awards are given: Distinguished Research Achievement Award(DRAA), Outstanding Researcher Award(ORA), Outstanding Young Researcher Award(OYRA), Outstanding Research Student Supervisor Award(ORSSA), and Research Output Prize(ROP)

Checklist Table

	items	Checklist
1	Cultivating A Good Research Climate	☐ Are there one or more people in the research institution who are responsible for coordinating initiatives to promote the cultivation of a good research climate? ☐ Are initiatives being carried out in the research institution to reinforce awareness of the importance of research integrity, not only among researchers but also among research support providers（administrative staff, URAs, etc.）and the executive branch? ☐ Are initiatives that emphasize research integrity being carried out continuously in the research institution? ☐ Does the executive branch of the research institution demonstrate leadership in clearly articulating issues around the promotion of research integrity to members of the organization? ☐ Does the research institution disseminate information on research integrity to its members? ☐ Are the roles and responsibilities of departments and staff related to research integrity shared within the research institution along with an overview of relevant rules and regulations? ☐ Are opportunities provided for researchers, research support providers, the executive branch, and students to meet and discuss problems related to the implementation of initiatives, training, etc., on research integrity? ☐ Are there clear procedures in place for decision-making to resolve issues shared by researchers, research support providers, the executive branch, and students? ☐ Do those in charge of research support visit each research office and department periodically to establish mutual communication? ☐ Does the research institution carry out initiatives to enhance the overall transparency of its education and research activities? ☐ Does the research institution emphasize the duty of creating a better research environment rather than simply dealing with research misconduct, as the objective of carrying out research integrity-related tasks? ☐ Is there a good understanding of which members of the research institution are actively involved in research integrity activities, both internally and externally? ☐ Are there opportunities to share information on research integrity with other research institutions, within the boundaries of confidentiality? ☐ Is the institution up to date regarding the state of research integrity domestically and internationally?
2	Establishment of Rules for Research Integrity	☐ Are rules for RCR（rules on FFP and other forms of research misconduct, rules on research ethics, such as human and animal subject protection, etc.）in place in the research institution or its departments, and are these rules in compliance with national guidelines? ☐ Are rules concerning conflicts of interest, copyrights, intellectual property rights, information security, exports control, etc. included in the research institution's policies on research? ☐ Are the rules of the research institution, when compared with those of other research institutions, government ministries, and academic societies, revised regularly based on these comparisons?

	items	Checklist
2	Establishment of Rules for Research Integrity	☐ Are there rules in place that consider domestic and international collaborative research with other research institutions? ☐ Are the research institution's rules for research integrity shared properly among members of the organization and with the public? ☐ Are above rules updated continuously?
3	Dealing with Research Misconduct	☐ Are the behaviors that constitute research misconduct clearly defined in the rules of the research institution? ☐ Are the behaviors that constitute questionable research practice, a type of research misconduct, clearly defined in the rules of the research institution? ☐ Are the decision-making processes for dealing with allegations of research misconduct clearly defined in the rules of the research institution? ☐ Does the research institution examine and consider systems of cooperation, which may involve superiors, colleagues, or specialists who can be consulted, that can be used when the person in charge of dealing with allegations of research misconduct is unable to do so? ☐ Has the research institution established a governance system, including definitions of responsibilities and authorities, for investigating allegations of research misconduct, and does it disclose this information to members? ☐ Are the procedures for investigating and dealing with research misconduct transparent to both those in charge of conducting the investigation and the complainant and respondent? ☐ Are investigation procedures conducted with due respect and consideration to protect the positions of the complainant and respondent, and any witnesses or others involved? ☐ Do the members or others involved in research misconduct investigation committees understand what needs to be done in terms of governance, and are there any points to be considering regarding research integrity? ☐ When investigating research misconduct, do investigation committees adhere to any rules stipulated by the research institution or funding sponsors on the implementation and reporting of misconduct investigations? ☐ Are staff in charge of investigations into research misconduct and members of the investigation committee required to consider and disclose potential conflicts of interest that might arise with the complainant and /or the respondent? ☐ Do those involved in investigations into research misconduct and members of the investigation committee strive to maintain confidentiality with regard to any information that comes to light during investigations? ☐ Has the research institution defined suitable rules, procedures, and formats of disclosing the results of investigations into research misconduct? ☐ Are issues related to the methods of conducting research misconduct investigations and managing the committees shared among members, within the boundaries of confidentiality?
4	Establishing Committees to Review Research Ethics	☐ Are the rules, scope of review, content for which application is required, review procedures, and review schedule of each research ethics review committee in the research institution clearly stated? ☐ Does the ethics review committee for human subject research conduct checks to ensure that research involving human subjects, samples or data collected from human subjects, and personal data comply with domestic and international legal and ethical requirements and other applicable guidelines?

	items	Checklist
4	Establishing Committees to Review Research Ethics	☐ Does the ethics review committee for animal-related research conduct checks to ensure that research involving animal testing complies with domestic and international legal and ethical requirements and other applicable guidelines? ☐ Does each ethics review committee conduct checks to ensure that systems are in place that comply with domestic and international legal and ethical requirements and other applicable guidelines when conducting research involving potential danger or harmful substances or research that might pose a danger to the environment? ☐ Is there a system in place in the research institution through which researchers can notify relevant government ministries and agencies and local authorities when carrying out surveys or research in the field? ☐ Is research to be reviewed by the ethics review committees considered and sorted in advance, including confirmation of whether certain reviews are required? ☐ Is position-specific training provided to ensure that internal and external members of research ethics review committees and administrative personnel understand the procedures and rules for committee management? ☐ Are there procedures in place to disclose conflicts of interest that members of research ethics committees might have? ☐ Do those involved in managing the ethics committees share issues regarding methods of conducting research misconduct investigations and managing committees with other committee members, within the boundaries of confidentiality?
5	Initiatives for Appropriate Management of Research Data	☐ Does the research institution inform researchers about their obligation to comply with the rules of the institution itself and of funding sponsors in terms of how the outcomes of research and research data are handled? ☐ Has the research institution included rules for protecting and managing the use and ownership of research data under intellectual property rights in collaborative research agreements related to research findings? ☐ Do the research institution's research ethics review committees verify that consent documents for participation in experiments include provisions on how research findings will be handled? ☐ Does the research institution inform its students, faculty, and researchers of internal rules on the ownership and management of research data? ☐ Does the research institution inform researchers of the types of research data that should not be openly shared to protect research subjects or for other reasons? ☐ Does the research institution inform researchers of any rules for managing research data stipulated by funding organizations or academic associations? ☐ Does the research institution implement measures to encourage researchers to ensure reproducibility, traceability, and accountability in their research, such as providing infrastructure for maintaining and managing research data in an objective manner?
6	Providing Opportunities for Education on Responsible Conduct of Research (RCR)	☐ Does the research institution provide opportunities to learn about RCR tailored to the positions of members involved in research activities and their experience levels? ☐ Are learning opportunities on RCR provided where necessary not only for members of the research institution but also for other personnel involved in research activities, such as external research collaborators or dispatched staff?

	items	Checklist
6	Providing Opportunities for Education on Responsible Conduct of Research (RCR)	☐ Does the research institution conduct initiatives that integrate both compliance and voluntary RCR activities? ☐ Does the research institution appoint a person competent to promote and oversee RCR? ☐ Do those in charge of RCR education in the research institution have opportunities to receive regular training and professional development? ☐ Does the research institution adhere to any relevant funding sponsor rules when providing training in RCR?
7	Research Guidance and Mentoring for a Good Research Climate	☐ Does the research institution have a policy that those involved in providing research guidance (hereafter "instructors") should be mindful of the diversity (of cultural backgrounds, life events, able-bodiedness, etc.) of those who receive their guidance (hereafter "students"), while respecting them as independent researchers and allocating sufficient time to their needs? ☐ Do instructors provide opportunities for students to receive advice and consultation on matters other than research activities? ☐ Do instructors keep records of the content and methods of their consultations and the advice they provide? ☐ Does the research institution provide opportunities for students to undergo professional development to help instructors fulfill their roles and responsibilities as an instructor or mentor? ☐ Does the research institution provide opportunities or consulting services through which students or mentees can talk about and solve problems that arise when they receive guidance from instructors or mentors? ☐ Does the research institution permit students to form student or peer support groups where they can support one another and share advice? ☐ Does the research institution provide resources that can help members of the organization develop their careers as researchers?
8	Evaluating Responsible Research Activities	☐ Does the research institution evaluate the outcomes of a researcher's activities in a way that reflects the standard practices of the research field? ☐ Does the research institution commend researchers for their involvement in nurturing future generations and for being a good mentor? ☐ Does the research institution commend researchers for their involvement in its research integrity activities? ☐ Does the research institution evaluate the openness and reproducibility of research activities when hiring and promoting researchers? ☐ Does the research institution commend researchers and research support providers for their contributions toward cultivating a good research climate?