

Check tests for Understanding of Research Ethics

(Fair Research)

1. Scientific research is predicated on the ability of scientists to be able to trust in each other's research. This is why scientists must maintain integrity in drafting, planning, applying for, implementing and reporting on their research. Scientists, by publicizing the results of their research as papers, gain recognition of their achievements according to the roles they have played, and at the same time, have responsibility for the content of the papers.

⇒ Correct

2. Misconduct must not occur in scientific research. Scientists must be conscious of the fact that helping to establish and maintain an environment respecting fairness is an essential obligation in carrying out responsible research and preventing misconduct. It follows that it is sufficient to be involved as far as time allows in education and awareness-raising and in improving the quality of the research environment to ensure honest research activities, in the scientific community, organizations they belong to, or their own research lab.

⇒ Incorrect (It is insufficient to be involved "as far as time allows". Scientists must be actively involved in these activities.)

3. Scientists must correctly evaluate and respect the research results and accomplishments of other scientists. They should evaluate or criticize the results of other scientists appropriately, accept criticism of their own research humbly, and ensure an honest and constructive exchange of opinions. It goes without saying that during this process there must not be any bias toward nationality, gender, age, status, academic background or other such point, and that they act fairly based upon the scientific method. Conflicts of interest do occur in research between individuals and organizations, differing organizations, and between the various duties each individual has, but on such occasions, a scientist should criticize the researching party, and then should try to make the other person reconsider the situation.

⇒ Incorrect (If a conflict of interests occurs during research, the scientist must listen closely to the other person and lead them to making the correct decision, instead of criticizing them and encouraging them to reconsider.)

4. When having people participate in specific research activities as subjects, the character and rights of the participants must be respected, and their consent obtained after sufficient explanation of the research. However, there are occasions where adjustments must be made to ensure that the advantages to the experimenter are not outweighed by disadvantages. In research utilizing animals, their suffering should be limited as far as is possible, and a sincere attitude taken to ensure that their contributions are not in vain.

⇒ Incorrect (Must ensure that the advantages to the participants are not outweighed by disadvantages.)

(The Value of and Responsibilities of Research)

5. When drafting a plan for research, the first thing that must be considered is what the research is for. Of course, the intellectual curiosity of the scientist lies at the bottom of all research activities, but particularly in the modern age, we must be aware of the potential for knowledge or technology gained from research in any field to affect society and the environment.

⇒ Correct

6. Scientists are responsible for ensuring the quality of the specialized knowledge and technology they generate, as well as responsible for contributing to the health and welfare of humanity, social safety and peace, and maintaining the global environment by using their own specialized knowledge, technology and experience. These are the basic responsibilities of scientists.

⇒ Correct

7. Planned research, whether for the sake of gaining a degree such as a master's or a doctorate, or as part of a large-scale international project, must have scientific validity. To confirm the scientific validity, creativity and so on of research, carefully investigating and analyzing prior research is not so important; the important point is to ascertain the ethical framework or code of conduct defined by relevant academic societies, and whether the research you are planning is consistent with such.

⇒ Incorrect (It is highly important in planned research to carefully investigate and analyze prior research.)

(Freedom of Research and Matters Requiring Protection)

8. The knowledge brought to society through the results of scientific research is immeasurable. Contemporary scientists have an obligation to continue promoting these activities. Guaranteeing freedom of research is a basic requirement for this. Therefore, anything done in the name of scientific research should be permitted to the extent that it can contribute to the health and welfare of humanity.

⇒ Incorrect (It is not the case that anything done in the name of scientific research should be permitted even if it can contribute to the health and welfare of humanity.)

9. What sort of things should be protected for freedom of research? Simply put, science is expected to contribute to the health and welfare of humanity, social safety and peace, and maintaining the global environment, and the value of these must be protected in research. Planning research to threaten the safety of society cannot be allowed.

⇒ Correct

10. Medical research which takes people as its subject must be in accordance with generally accepted scientific principles, with close consideration to prior research, sufficient experimentation in the laboratory, and, if legitimate, sufficient testing on animals. The design and method of implementation of research taking people as its subject, must state in detail the experimental process in the research implementation plan, rather than explaining its legitimacy.

⇒ Incorrect (The legitimacy of the design and method of implementation of research taking people as its subject is highly important, and must be stated concretely in the research implementation plan.)

(Conflicts of Interest)

11. In our contemporary society, where scientific research and industry are closely intertwined, scientists are being placed in situations where they hold multiple roles. For example, some scientists may hold a full-time post at a university yet also be a consultant for a company, or may have themselves started a company and be known as an entrepreneur. When a relationship of interest occurs between these differing roles (e.g. economic profits or losses), this gives rise to a situation that impacts on, or is deemed to impact on, the objectivity that is the most important value for science. This is called a "conflict of interest".

⇒ Correct

12. Conflicts of interest can be a conflict of interest in the narrow sense, or a conflict of responsibilities. A conflict of interest in the narrow sense concerns economic gain or loss, whereas a conflict of responsibilities arises from multiple responsibilities to accomplish duties through being involved in concurrent activities, leading to a situation involving loss of judgment in or neglect of one's proper duty, or where such a situation is judged to exist by a third party. A situation where a university faculty member neglects their proper duties of educating students and supervising research due to being too busy with various concurrent external matters, is a conflict of interest in the narrow sense.

⇒ Incorrect (A situation where a university faculty member neglects their proper duties of educating students and supervising research due to being too busy with various concurrent external matters, is a conflict of responsibilities.)

(Consideration to Security)

13. From the standpoint of international security, controlling the provision of technology or exporting freight that has the potential to be used for weapons of mass destruction is regulated under international agreements between the major nations of the world, including Japan. This is referred to as "security trade control". Japan has created and is operating a system for such control based upon its Foreign Exchange and Foreign Trade Act. This was originally focused on controlling exports of the products of companies, but in consideration of the progressive international academic and industrial collaboration, security trade control is also strongly required of universities and research institutions from 2005.

⇒ Correct

(Informed Consent)

14. To allow participants in research (subjects) to make a decision whether to participate or not, they must be given the requisite information along with sufficient additional explanation. This information must be in the form of documentation clearly laying out the research procedures, methods, purpose, risks, expected benefits, the possibility of other methods (if treatment is involved), and stating that the subject can at any time ask questions about the research or decide to end their participation. It is also recommended that the method used to select the research participants (subjects) be included. However, there is no recommendation to include

information on the person in charge of the research.

⇒ Incorrect (Under the Ethics Guidelines Regarding Clinical Research, it is recommended to include information on the person in charge of the research.)

15. Even if the information provided is sufficient, if the means by which it is imparted is inappropriate (e.g. complicated ways of showing the information causing confusion, or explaining too much in a short space of time), the candidate subject will not be able to understand the information and cannot make a rational decision. Consideration must be given to the subject's intelligence level, their age, and their cultural background and language if they are a foreigner, to make the explanation easy to understand. It must be borne in mind that the terminology used at an everyday level by scientists in their research is specialized and difficult to understand for ordinary people. There are many cases where, even having taken these considerations, the subject's failure to understand still goes unnoticed. However, conducting a test to see if the subject understands the explanation is rude and hence unnecessary.

⇒ Incorrect (Because there are many cases where the subject's failure to understand still goes unnoticed, consideration must be given to at least conducting a test to see if the subject understands the explanation.)

(Protecting Personal Information)

16. Under the Act on the Protection of Personal Information, the term "personal information" shall mean information about a living individual which can identify the specific individual by name, date of birth or other description contained in such information (including such information as will allow easy reference to other information and will thereby enable the identification of the specific individual). Specifically, this does not only mean information allowing an individual to be identified through their name, gender, date of birth and so on, but in fact all information showing facts, judgments or evaluations of a person, including their physical description, property, occupation, work title and other attributes.

⇒ Correct

(Data Collection, Management and Processing)

17. Data refers to all types of information based upon facts and used in logical reasoning. The importance of data in research is self-evident; without data, research is not possible. What to take as data differs in each discipline. In history, for example, a wide variety of types of data are available: not only printed matter and publications but also handwritten letters and related objects. In sociology and anthropology the results of questionnaires are vital, while records of interviews and suchlike are treated as supplementary data. The world of empirical science has measurement and visual data gained by observing natural phenomena or carrying out experiments.

⇒ Incorrect (In sociology and anthropology the results of questionnaires and also the records of interviews and suchlike are both vital data.)

18. Experimental data usually takes the form of laboratory notes (also referred to as research notes or experimental notes). The laboratory notes in which the data and ideas are recorded and managed in appropriate forms play at least three primary roles. (i) As proof that the research is being carried out fairly. (ii) As

evidence proving the novelty of results gained by the research. (iii) As a means to visualize and share data and ideas within the laboratory and research group and use them effectively, a tool of the so-called "knowledge management".

⇒ Correct

19. Institutions providing grants for research costs require data to be stored for a certain period even after the research presented in the research plan is completed. A storage period of ten years is recommended for data of research involved with patents and suchlike. In such cases of long-term storage, this duty is the responsibility not of each individual scientist and laboratory, but of the entire organization to undertake.

⇒ Incorrect (A storage period of thirty to fifty years (not ten years) is recommended for data of research involved with patents and suchlike.)

(Research Misconduct)

20. Fabrication, falsification, and plagiarism are actions defined not only in Japan but by countries worldwide as research misconduct, and are often abbreviated to their initials as FFP. These three are also used as the definition of research misconduct by the US Code of Federal Regulations. However, the international trend is to view various types of deviant behavior as research misconduct, in addition to FFP. Under the European Code of Conduct for Research Integrity, examples cited of misconduct are: failure to meet clear ethical and legal requirements such as misrepresentation of interests, breach of confidentiality, lack of informed consent and abuse of research subjects or materials, as well as including improper dealing with infringements, such as attempts to cover up misconduct and reprisals on whistleblowers.

⇒ Correct

21. Fabrication and falsification are serious violations of the aim of scientific research in its search for truth, and must also be recognized as causing a loss of trust in the scientific community by society, and even going so far as to lead to damage to people's health and safety. They also cause the waste of the time, effort and research costs of other researchers who attempt follow-up experiments believing the data publicized by such researchers to be true. When a certain researcher announces a new idea, other scientists will attempt to ascertain the validity of it and to work together to take this research further. Even as the scientific community seeks to further science through mutual cooperation, with scientists competing against each other yet building up their research respectively, fabrication and falsification batter down its foundations.

⇒ Correct

22. Research announced by its author is the original work of that author, and the information, ideas and text contained therein must be the author's own. Plagiarism violates the trust of this. Plagiarism is the faking of authorship, and signifies the lack of the ethical quality of honesty in the individual researcher, making it a serious violation of occupational ethics. However, while plagiarism as an ethical issue, it is not punishable as a violation of law.

⇒ Incorrect

23. According to empirical study reports on research activities, numerous researchers have been involved themselves in questionable research practices (QRP), or have witnessed such. In the same way as specific misconduct identified as fabrication, falsification, and plagiarism (FFP), it must be recognized that QRP also wastes various research resources and causes loss of credibility among society and the scientific community, and inside the scientific community itself.

⇒ Correct

(Obligation of Confidentiality)

24. When performing research involving people as subjects, there is no obligation of confidentiality to protect the personal information gained through the research, but doctors and medical personnel are legally obliged to do so. Similar obligations do not apply to other people involved. However, the Ministry of Health, Labour and Welfare's Ethics Guidelines Regarding Clinical Research indicates that the person in charge of the research has the responsibility of informing and urging compliance with the obligation of confidentiality among all the research team members.

⇒ Incorrect (When performing research involving people as subjects, there is an obligation of confidentiality to protect the personal information gained through the research, and the same obligation applies to others involved in the research.)

25. The status of students who participate in joint research involving a university and a company requires special consideration over and above ordinary joint research. Scientists are employed by a university or research institution, and have various obligations, including the official obligation of confidentiality, based upon the employment contracts. Students, on the other hand, pay academic fees to receive education and research guidance, and as a result obviously do not have the same obligations. Students will still have the same obligations as faculty if employed as researchers with external funds or suchlike, but whether they should sign confidentiality agreements or non-disclosure agreements in the same way as faculty requires careful scrutiny, in accordance with the details of such. The reason for this is that the students may, in the future, be employed by rival companies to the company involved in the joint research, which may restrict the freedom of the students in finding employment due to these types of obligations.

⇒ Correct

26. If students who have participated in joint research after signing confidentiality agreements with the university divulge the confidential information to another company, the students are not subject to compensation claims. However, as the educational responsibility to the students and their interests and the joint research as academic and industrial collaboration cannot be said to be completely the same, the research supervisor should understand both points of view to assign the status of the students.

⇒ Incorrect (If students who have participated in joint research after signing confidentiality agreements with the university divulge the confidential information to another company, the students may be subject to compensation claims.)

(The Responsibilities of Primary Researchers)

27. When conducting research as a team, younger scientists or graduate students often become team members. In such situations, it must be recognized that the behavior of the primary researcher can have a large impact, including in educational terms. While it is important to maximize the research results as a team, it must be remembered that the publication of the paper is not the only result to be gained. The fostering of researchers with integrity and the creation of environments allowing scientific research to be conducted soundly are also highly creditable research results. Care must be taken not to cause people to become anxious or agitated.

⇒ Correct

(Announcing the Research Results)

28. The freedom of scientists in academic studies and research (Article 23, Constitution of Japan) is not entrusted to them from society, but does presuppose the trust of society. The announcement of a scientist's research results are not only the foundation for subsequent research, but an asset deepening humanity's knowledge, to be carried down through the generations via the written paper and report. In addition, for contemporary scientists, there is an even greater demand to make available diverse knowledge and opinions to further healthy discussion and development among society.

⇒ Incorrect (The freedom of scientists in academic studies and research (Article 23, Constitution of Japan), is entrusted to them by society.)

29. The results of the research of scientists are usually announced by being published as a paper in an academic journal, but in some disciplines they may also be published in book form, or presented at an academic conference or a scholarly association.

Interviews by journalists or announcement of research results by holding a press conference require different considerations to publishing through an academic journal or a presentation at an academic conference. The effect of the mass media on contemporary society is extremely powerful, whether it is through print media like newspapers and magazines, or through electronic media like the TV, radio or Internet.

⇒ Correct

30. Normally research results announced through academic journals, publications and so on are shared with the ordinary community as well as the scientific community. The results of the research cannot be shared if they are not announced in a suitable way. Responsible research must maintain honesty, accuracy, efficiency and subjectivity, and the announcement of the research results must also satisfy these.

⇒ Incorrect (Must maintain objectivity, not subjectivity.)

31. Many papers feature several people's names as the authors. In such cases, if an author had responsibility only for a specific part of the research, this must be stated clearly. If this is not done, the author will be deemed responsible for the entire results as announced, and will be subject to questions of accountability if research misconduct occurs even in an area in which he or she had no involvement in.

⇒ Correct

32. Scientific research is built on the accumulation of previous research results by other researchers. Accordingly, it is vital that prior research is taken into account when conducting research, and that due consideration also be given to it when writing the paper. However, only surveying prior research does not guarantee the drafting of an original and appropriate research plan or clarify the significance of the research.

⇒ Correct

33. There are cases when using works where the acknowledgment of the copyright holder is not required. For instance, use of works which are not subject to protection under the Copyright Act, like national laws or local government ordinances, copying for private purposes, or use of works for which the protection period has expired, can be made without gaining acknowledgment as long as "All Rights Reserved" is not stated on them.

⇒ Correct

(Joint Research)

34. Research activities have always had a propensity to go beyond international borders, and with the rise of globalization, international joint research is spreading. Joint research requires special consideration, as it involves researchers from various disciplines and backgrounds working together. In international joint research, the scientists will have been raised in their differing respective national customs and ways of behavior, and even the approach to research ethics may not be the same. However, priority should be given to ensuring the joint research is not brought to a halt by paying attention to such points.

⇒ Incorrect (Especially in international joint research, attention must be paid to the fact that the scientists will have been raised in their respective national customs and ways of behavior, and even the approach to research ethics may not be the same.)

35. The bigger the scale of the research organization, the more difficult it is to maintain communication, and the easier it is to become neglectful over sharing information and issues. Joint research by a company and a university in which graduate students are participating may not have the same mutual interest, e.g. in the timing of the announcement of the research results. Scientists themselves are also in a competitive relationship with each other, so the central scientists, such as the representatives, and each member also as a matter of course, must devote themselves to communication within the organization, to consciously promote internal communication.

⇒ Incorrect (The central scientists, such as the representatives, and each member also as a matter of course, must consciously promote communication inside and outside the organization.)

36. In the case of joint research with a company or other similar organization, in most cases a written agreement to clearly set out who the data and research results belong to is created, but even in such cases the entirety of the matters cited above may not be covered. It is important to confirm these matters with the other party verbally as they arise.

⇒ Incorrect (If there are matters to do with who the data and research results belong to that is not covered in the agreement, it is important that they be confirmed in written form, not verbally.)

(Peer Review)

37. Peer reviews play an essential role in ensuring and improving the quality of scientific research. Peer reviews (reviews by one's peers) are central to assessment involving scientific research in every circumstance, such as publication of a research paper in an academic journal, selection for research grants, employment or promotion of a scientist, or evaluation by a university or research institution. Only scientists are able to give eminent judgments in such cases, and this is the basis of the independence of the scientific community, in accordance with the realization of the need for the scientific community to make decisions in every area of scientific research.

⇒ Correct

(Research Ethics Education)

38. To ensure and improve the quality of scientific research, the most essential points are to prevent research misconduct from happening and to promote responsible research. To fulfill this important responsibility, it is vital to that each researcher acquires the knowledge and skills indispensable to accomplishing responsible research, hence it is sufficient for each university and research institution to provide research environments to promote responsible research within the extent they are able to, without over-stretching themselves. The potential of an over-competitive research environment to induce misconduct has been pointed out already by many people. The important points for the research environment are whether it takes initiatives to realize responsible research as an organization, and whether it has a firm framework for the management and storage of research data. To suppress misconduct and promote responsible research, the organized actions of universities and research institutions play a vital role.

⇒ Incorrect (To play vital roles in promoting responsible research, each researcher must acquire the knowledge and skills indispensable to accomplishing responsible research, and to create a research environment that promotes responsible research.)

39. It is the normal course of events these days for researchers to change their research laboratory from when they were a student to when they have become a university faculty member, according to the phase of their research life. More people go overseas during their graduate years or post-doctorate. Environments where people acquire their knowledge and skills at a single research laboratory like an apprenticeship are disappearing. Use of methods from other disciplines and interdisciplinary joint research with researchers in various fields have increased. More consideration is required for methods of research usable beyond a single discipline or country. Approaches to authorship and the handling of research data are also changing with the times. Actions that would not have been a problem in the past are now considered as a problem. Society is also more strict toward research misconduct than before, and greater emphasis must be given to promoting responsible research from the standpoint of science in society.

⇒ Correct

(Preventing and Denouncing Research Misconduct)

40. Only scientists are capable of knowing if misconduct is suspected or has occurred, and as such they must correct such misconduct. This is why research institutions such as universities have a facility or office to receive whistleblowing reports. Organizations that supply grants for research costs such as Ministry of Education, Culture, Sports, Science and Technology and the Japan Society for the Promotion of Science (JSPS) also have such facilities or offices. When someone comes across a situation they suspect involves misconduct in actual research work, it is recommended that they first consult with the whistleblowing office of the relevant institution, prior to pointing it out to someone involved in the said research or discussing it with another research member.

⇒ Incorrect (When someone comes across a situation they suspect involves misconduct in actual research work, it is recommended that they first point it out to someone involved in the said research or discuss it with another research member.)

(Roles of Scientists)

41. The social roles of scientists can be said to be (1) to generate knowledge through scientific research, and to pass on knowledge to subsequent generations, and (2) to provide scientific advice to society. The results of scientific research are returned to society in the form of new knowledge about matter, living beings and so on, or as technology or information able to solve or achieve various challenges faced by society. The majority of scientific research is funded by public monies and allows scientists the privilege of freedom in their work, yet it goes without saying that the scientist has important responsibilities in society. It can be said, then, that scientists have an unwritten agreement with the rest of society to carry out research fairly and with integrity. Scientists also have responsibilities in education and guidance in order to hand on scientific knowledge to the next generation.

⇒ Correct