Summary of the Interim Report on Suspected Research Misconduct at the Research Laboratory of Former Professor Shigeaki Kato at the Institute of Molecular and Cellular Biosciences

1. Background to the investigation

The Committee on the Code of Conduct for Research ("the Committee") is investigating a case of suspected research misconduct by former professor Shigeaki Kato and his research laboratory in the University of Tokyo Institute of Molecular and Cellular Biosciences. The investigation is being carried out thoroughly with due regard to the great number of articles and co-authors involved and the complexity of the causes of and background to the issue. So far, the Committee has identified articles that include inappropriately manipulated or omitted graphic data. However, further investigation is required in order to identify the individuals involved in this inappropriate manipulation of graphic data and in what way they were involved. Further, when the individuals involved have been identified, they must be provided with an opportunity to explain their actions and also to file an individual appeal in accordance with the University of Tokyo Rules on the Committee on the Code of Conduct for Research.

The president of the University of Tokyo stated that "the University takes these cases most seriously as they impact not only the University's honor and society's trust in the University, but also international opinion of and trust in science in Japan as a whole" in his message titled *A High Standard of Research Ethics as the Ethos of the University of Tokyo* (October 8, 2013). Although the Committee has not yet come to a conclusion on research misconduct by any particular individual or for each article, sharing the president's concern, the Committee has decided to submit to the president an interim report on its investigations for reference during the consideration and implementation of organizational reforms.

2. Case summary

It has been confirmed that among the articles investigated there were a considerable number of articles that included inappropriately manipulated graphic data (see appendix 1 for full list). Inappropriate manipulation of graphic data can be categorized into the following four types: 1) combining two or more data graphics together, 2) reuse of graphic data from other experiments, 3) partial deletion or omission of graphic data,

and 4) excessive manipulation of image contrast (see appendix 2 for visual examples).

3. Case background

Several factors are being considered as possible causes of the current case. These include having a large and diverse research laboratory and the importance of publishing research articles describing high impact research in scientific journals of international repute in combination with poor management of experimental data, negligent checking of article content, and poor awareness of regulations concerning research ethics.

(1) On the research laboratory leader

The division of responsibility for inappropriate manipulation of graphic data has yet to be established. However, it is appropriate to question the management of the research laboratory, both by former professor Shigeaki Kato as laboratory leader and those in positions managing the running of experimental research and educational supervision.

(2) On article authors

In general, authors who are listed as corresponding author, first author, contributing author or co-author naturally bear responsibility according to their role in preparing articles that include manipulated graphic data. However, in this particular case, it is apparent that this premise concerning author responsibility was not shared among the authors involved and there are cases in which the publication process was not carried out appropriately. For these reasons, further investigation is required on the matter of authors' responsibility.

4. Preventing recurrence

(1) The Institute of Molecular and Cellular Biosciences has already taken the following measures to prevent recurrence: requiring members to submit research data and introducing an institutional data management system, informing members about the Code of Conduct for Research, and providing graduate students with opportunities to interact with graduate students and faculty members from other research laboratories. Other measures are also under consideration.
(2) An "Action Plan for Research Ethics" is being developed at the university-wide level and includes the following important measures: the enhancement of research ethics education for undergraduate and graduate students, promotion of research data

storage and research data databases, creating archives of cases of misconduct, and appointment of an individual in charge of research ethics at each faculty, graduate school, institute, center or other organizational unit of the University. The Committee will take this Action Plan into account when drawing up its conclusions in the current case and outlining future actions to be taken to prevent a recurrence.

5. Continuing investigation

The Committee will continue its investigations to identify the individuals who were involved in the inappropriate manipulation of graphic data in the articles and how they were involved. When the individuals involved have been identified, the Committee will provide them an opportunity to explain their actions and also to file an individual appeal, and will publicize its conclusions about this case of suspected research misconduct as soon as possible. The Committee emphasizes that each member of the university should work hard to recover society's trust in the university and science as a whole, sharing the sense of crisis made clear in the President's message that "our integrity as individuals engaged in the pursuit of truth and creation of knowledge, as is stated in the University Charter, is being seriously questioned".