

**The 4th Review Committee
Evaluation and Suggestions**

(April 8, 2016)

Bioresource Engineering Division

Division Head: Atsuo Ogura

◎: Compulsory report items ○: Major report items ●: Optional report items

◎ *1-1a. Have sufficient results been achieved? (The BRC's standing in the world, contribution to society.)*

- It can be evaluated as generally overwhelming expectations:
 1. The Division receives high marks for many significant successes, including developing a new superovulation method, improvement of the methods for generating cloned mice, and establishing high-quality TS (trophectoderm Stem) cell lines. All of them contributed to foundation for bio-resource projects, such as efficient maintenance of existing resources and establishment of new resources. In addition, this Division has made marked achievements in the field of basic biology including epigenetic regulation of mouse development.

◎ *1-1b. Responses to previous comments and advice*

- From the following perspectives, it can be evaluated as adequately addressed:
 1. It is admirable that the Division is selectively culling research topics in order to maximize research results.

○ *1-2. Is the self-analysis of strengths and weakness adequate?*

- From the following perspectives, it can be evaluated as adequately analyzed:
 1. According to Division's self-evaluation, one of the weaknesses is that the Division is working on a variety set of issues, but the Division is currently achieving good results in almost all areas, so it looks as if this is a strong point rather than a weakness.

2. It is important to narrow down topics in accordance with division's number of personnel.
- The Committee offers the following suggestions for further improvement:
 1. It is stated that the introduction of next-generation sequencing technology is an issue, but this is not an issue that one division can deal with alone. The Center as a whole ought to look at guidelines for this project, including collaboration with other Centers within RIKEN.

● *1-3. Is the plan reasonable for the medium to long term?*

- From the following perspectives, it can be evaluated as reasonable:
 1. Analysis of TS cells and attempts to create higher-quality TS cell lines are progressing. Good results in this area are highly likely to lead to breakthroughs in developmental biology.
 2. Classification of issues into those that are essential for the resource infrastructure project and those that are challenging, that is, difficult to achieve but likely to have an impact, is effective. Live-imaging technology for eggs and embryos, such as FRET, search for genome plasticity factors in the 129 strains, establishment of primordial germ cell lines and others are challenging areas of research.
 3. Rescuing eggs from aged female mice will have an impact as a practical method, and the Committee anticipates that it will gain visibility in society.

● *2a. Have appropriate fields been earmarked for future prioritization?*

- From the following perspectives, it can be evaluated as appropriate:
 1. This Division is an appropriate location for developing new genetic engineering technology in the Center, and its importance will not change in the future.
- The Committee offers the following suggestions for further improvement:
 1. The introduction of epigenome analysis for resource quality control is an important effort for ascertaining the factors underlying fluctuations in phenotypes and for fully establishing a high degree of resource homogeneity by preventing the fluctuation. The significance of this

research is well recognized. Note, however, that the research methodology is a bit lacking in specificity.

● *3-2. Are the policies for future resource infrastructure and technology development appropriate?*

- From the following perspectives, it can be evaluated as appropriate:
 1. All of the technological developments that form the foundation for bio-resource projects are important, and it is expected that they will make a major contribution to the activities of the BioResource Center.

3-5. Training of global human resources

● *(ii) External*

- From the following perspectives, it can be evaluated as sufficiently presented.
 1. This Division receives especially high marks for continually training young human resources and preparing them to move on to other research laboratories outside the BRC.
 2. The Committee also gives high marks for offering technological trainings that are possible only in this Division.

● *4. Collaborations among the RIKEN Centers*

- From the following perspectives, it can be evaluated as sufficiently presented:
 1. Sufficient collaborations among the Centers have been formed. Cross-disciplinary research is taking place in the “Epigenetics Project”.