

**The 4<sup>th</sup> Review Committee  
Evaluation and Suggestions**

(April 8, 2016)

**Technology and Development Team for Mammalian Genome Dynamics  
Team Leader: Kuniya Abe**

◎: 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 meeting expectations:
  1. The establishing the EpiSC (Epiblast Stem Cell) line by means of Wnt signaling inhibition has had a major impact as a foundation of stem cell resource development. The discovery that the transitions of stem cell naïve states and primed states can be accelerated by Wnt inhibition will contribute to basic stem cell biology. In addition, it is also expected to make a major contribution to resource development in the future.
- The Committee offers suggestions to produce sufficiently enhanced performance in the future:
  1. The plan appears to be progressing toward achievement as anticipated, but the appeal of the achieved portion appears to be modest. This is an issue that also relates to the connection with joint research; if the appeal is more attractive, it would enable even further vitalization of the field/technology through joint research with a variety of researchers. Specifically, it would be a good idea to make collaborative effort, in which the naïve-primed conversion system will be used widely through the support from this team. If successful cases come out, it will be a great appeal.

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

- From the following perspectives, it can be evaluated as adequately addressed:

1. Last time it was pointed out that there was insufficient differentiation from research conducted at universities. This time, the team presented technology development with more emphasis on cellular resources, the better method for establishing stem cell resources, for example. This is a field that can be advanced advantageously for RIKEN, including collaboration with other Centers and organizations within RIKEN. In that sense, it is considered that the team addressed very well the issue identified last time.

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

- From the following perspectives, it can be evaluated as adequately analyzed:
  1. Both analysis of cells and improvement of imaging technology are important parts of the BRC's function. It is commendable that these are being pursued as projects of RIKEN as a whole (4D imaging project).
- The Committee offers the following suggestions for further improvement:
  1. It is fully clear that a contribution is being made to the advancement of science, but it would be preferable to provide an explanation of how a contribution is also being made to the BRC mission, one that is more readily understandable to third parties.

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

- From the following perspectives, it can be evaluated as generally appropriate:
  1. The aim to provide new gene editing methods in relation to the CRISPR method is a desirable direction to take. However, the competition is correspondingly intense. This is a field where research of the originality and creativity characteristic of RIKEN is most wanted, and it is to be hoped that research will be carried out in an increasingly challenging manner. It is anticipated that research will produce results that lead the rest of the world.
- For some portions that are deemed insufficient, the Committee points out and makes suggestions as follows:
  1. The development of CRISPRa and CRISPRi is very interesting, but the development of manipulation system for gene expression using a

CRISPR system is being undertaken at many laboratories around the world, and it seems unnecessary to direct effort into anything other than resources that are to be used by this team itself.

### *3-3. Innovation hub*

#### ● *(i) Collaboration between industry, academia, and governments*

- From the following perspectives, it can be evaluated as sufficient:
  1. Joint development with corporations is commendable.

#### ● *(iii) Continuous operation and attracting new users*

- From the following perspectives, it can be evaluated as sufficient:
  1. EpiSC cells and 4D observation technology are important key technologies, so their use, both directly and indirectly, can be expected to increase in the future.

#### ● *4. Collaborations among the Riken Centers*

- From the following perspectives, it can be evaluated as sufficiently presented:
  1. The approach of characterizing bioresources using new image-analysis technology appears to be optimal for projects within RIKEN.
  2. Participation in the single cell project and other such activities are producing a record of performance.