

Evaluations and Comments

3rd Meeting of the RIKEN BioResource Center Review Committee (Technology and Development Team for Mouse Phenotype Analysis)

April 3, 2014

1. Achievements

(1) Has the Division, Team or Unit achieved sufficient results? Please evaluate and give us advice and suggestions from the following view point:

- **Has contribution been made to reinforcing BRC's raison d'être?**
 - **Have advanced, innovative results been achieved?**
 - **Have scientific results been produced?**
 - **Has there been social impact?**
 - **Has contribution been made to advancing BRC's resource infrastructure?**
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- Mouse phenotypes are fundamental properties of mice as a bioresource. Platforms for comprehensive mouse phenotyping have been established to acquire systematic mouse phenotype information. This essential work enhances the significance of the BioResource Center as well as the value of bioresources.
 - The team's collaboration with international organizations such as IMPC on a daily basis is being highly acclaimed for its efforts to create a standardized method for mouse phenotyping, which should serve as the world standard rather than just the Japanese standard. Its active participation in various international bioresource projects facilitates the internationalization of basic bioresource research in Japan.
 - The ENU mutant mouse strain analysis has been steadily increasing the number of phenotyped strains and making a significant contribution to the bioresource infrastructure.
 - The data obtained from the comprehensive phenotyping of mutant mice are the only type of bioresource information that is standardized and accessible to the public in Japan. This achievement enhances the purpose of the center. There are other contributions to the bioresource infrastructure as well: the efforts for the 82 mouse strains covering all stages from acceptance and maintenance to phenotyping of mice, and quick identification of the genetic

background of mice. The public release phenotype information when it becomes available has been making a social impact.

- The team's academic achievements, including numerous published papers can be highly evaluated.
- Although much information has been obtained through mouse phenotyping, only a limited amount of information seems to have been released because of confidentiality agreements between the center and its clients. A different evaluation method should be used in such cases.

(2) Other matters

- **Collaborations within BRC and within RIKEN**
 - **Collaborations inside and outside Japan**
 - **Public relations activities**
- Both the national and international cooperative projects are maintained at a high standard. The mouse phenotyping project, conducted within the IMPC framework, is particularly noteworthy for its international cooperation. There has been some success in publicizing these activities
 - More efforts should be made enhance and improve media ties to bring this work to the public's attention.

(3) Response to previous year's evaluation and advice

- Although the expenses are shared by the Japan Mouse Clinic users in some cases, no user charging system has been established. Introducing a charging system will be controversial if the team continues to use public funding to maintain its activities. To continue the work of the Japan Mouse Clinic, a realistic solution including sharing expenses by the users has to be found since sufficient funding is not guaranteed.
- The user charging system has been an issue since the last evaluation. More efforts have to be made to resolve issues such as the charging system and analysis sets.

2. Plans as RIKEN's proposed change of status to a new system for Independent Administrative Institutions

(1) Are their plans appropriate to the proposed change in RIKEN's status? Please evaluate and give us advice and suggestions from the following view point:

- **Can dramatic advances be expected from their strategies and plans for the next 5 to 7 years?**
 - **Should proposed plans be undertaken in BRC?**
 - **What topics are effective and essential to implementing BRC's resource infrastructure?**
 - **Can advanced and innovative results be expected?**
 - **Can achievements that will lead to innovation be expected?**
 - **Can a major impact on society be expected?**
 - **Are the proposed plans novel, do they have high priority, and are they sufficiently specific?**
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- The proposal for reconstructing the mouse phenotyping platform, in which phenotyping mice strains associated with psychiatric disorders is given high priority, is appropriate. DOHaD research requires molecular biological analyses such as chromatin modification. Collaboration and cooperation within RIKEN and with other organizations should be considered. Malnutrition in pregnant women is a particularly serious issue in this research area. Establishing a mouse model system to assess the effects of maternal malnutrition could be greatly significant for both academia and society.
 - The infrastructure of the Japan Mouse Clinic is necessary to resolve various issues associated with interactions between genes and environmental factors. A nationwide framework, with the Japan Mouse Clinic as the core facility, has to be established to tackle such challenges. In this respect, the Japan Mouse Clinic operation is strategically important for RIKEN.
 - The team is effectively the only team that is intensively using the international standardized protocols in mouse phenotyping; therefore, this work is indispensable for life sciences and medical research using mutant mice in Japan. The center should host the team and its mouse phenotyping work.
 - Following the report of the CRISPR/CAS9 system, more KO mice will be produced. The team's intention to pursue future development of bioresource phenotyping in accordance with the international standard is highly regarded.
 - The team's phenotyping techniques are fundamental for increasing the value of bioresources.

This work also has academic significance. The facility should develop a new system which will enable the Japan Mouse Clinic of RIKEN BioResource Center to gain more public recognition. Thus, the proposal to focus on mouse phenotyping linked with behavioral-neural system is given high regard.

- Issues that remain to be resolved include making accurate estimations of the increasing number of mice and finding a solution for the current insufficient capacity to maintain the mice.
- Within five years, there will be a turning point in the bioresource infrastructure and the meaning of bioresources will be redefined. The team should act proactively to make the most of bioresources. Efficient project management and stable funding are crucial for the continuation of this work.
- RIKEN's possible status change to a non-profit national R&D organization could affect the work of the Japan Mouse Clinic. It is critical to secure a sufficient budget that will allow the Japan Mouse Clinic to maintain its operations since the Clinic will play a crucial role in Japan's leadership in scientific fields for the next ten years.
- Both international standardization of the Mouse Clinic and development of its own unique technologies are essential for the continuation of the team after RIKEN becomes a non-profit national R&D organization. A budget for this work should be allocated.

(2) Are suggestions made previously reflected in their current plans and strategies?

Have they endeavored to re-inspect their activities to date and made appropriate decision about what should be continued or discontinued?

- Unlike the other IMPC member countries, no public funding for projects is allocated in Japan. This issue needs to be urgently addressed by RIKEN as a whole rather than just the team. Whether a charging system is introduced or public funding from the government is sought, all of RIKEN, including management, should work together to resolve this problem.
- Education and training of the next generation should be considered.
- The previous evaluation results were well reflected in the current work.