

# **RIKEN BSI 9th ADVISORY COUNCIL REPORT**

**October 24-25, 2011**

## **OVERVIEW**

The RIKEN Brain Science Institute (BSI) has made remarkable progress towards becoming one of the top neuroscience research institutions in the world. This progress has been accelerated by a number of key measures instituted by the current director, Dr. Susumu Tonegawa. The advances that the Advisory Council found particularly valuable include: a) the change in the academic structure from a more hierarchical to one where all laboratory heads are independent; b) appointments and promotions include two levels: team leader (untenured) and senior team leader (tenured). The Council was also impressed by the progress towards recruiting and retaining the most innovative and productive researchers, the rigorous review for promotion, and the strong effort towards identifying new faculty from outside BSI. The Council found the openness with which the faculty and students discussed issues pertaining to research and training refreshing.

The advances made since the last review of BSI provide a fertile ground for implementing the following suggestions for further advancing the mission of the Institute.

### **I. ORGANIZATION**

#### **A. Mission of the BSI**

The Council views the mission of BSI as two-fold: 1) to carry out cutting edge brain research and 2) to train the next generation of neuroscientists. It is universally recognized, by academic and research institutes alike, that the dual missions of research and training are intertwined and inseparable. Independent laboratories require the participation of a cadre of young enthusiastic students who can promote the interdisciplinary nature of the enterprise, provide the engine for research, and allow for intergenerational transfer of knowledge and expertise. The defining feature of BSI is performing interdisciplinary science. Having students that work across disciplines and laboratory boundaries facilitates this. The nature of neuroscience in particular requires this kind of approach, opening possibilities of combining fields such as biology, chemistry, physics, engineering, and computational sciences. This takes advantage of the resources of RIKEN in general, which has strong expertise in chemistry and physics.

#### **B. Improving the recognition of BSI among the international community.**

As part of the effort to attract the best scientists to BSI from around the world, some measures can be taken to make the international community more aware of the attractions of the institution. One very effective mechanism is the existing summer course offered at BSI, which is attended by an international group of faculty and students. We recommend that BSI consider instituting additional courses and meetings to further attract postdoctoral researchers and faculty from other institutions, who can then advertise the BSI to their home institutions, and potentially provide candidates for recruitment in the search for new PIs. This has been effectively done at the Cold Spring Harbor Laboratory to give it a level of recognition out of proportion to its size. The meetings and courses should be targeted at the highest level, taught by the stars in the field, which attracts the best scientists to Japan, and by being open to a wide variety of scientists, also exposes the junior people at BSI to the best researchers in the field. Attendance of individuals from all levels at BSI, including students, postdocs, junior and senior

faculty at international meetings and visits to other institutions can further promote the recognition of the institute among an international audience.

#### C. Efficiencies of operations.

Given the impending budgetary crisis in the funding of science, there are several ways in which the operations could become more cost effective. It is generally recognized among the scientific staff that ordering is time consuming, the slowness of acquisition of needed items impedes the scientific effort, and the costs of ordered goods are inflated beyond reasonable expectations. The BSI headquarters has been preparing a new administrative electronic database system for the last 4-5 years, but it is not yet ready. The Council encourages a swift move towards computerized ordering from an electronic database and directly from vendors for speed and cost-effectiveness, similar to the system used by the University of Tokyo. A supply system of chemicals/drugs/devices and a travel manager for business trips can be operated using a web-based interface as a part of the administrative database.

#### D. Non-resident faculty.

The Council strongly recommends that BSI develop a non-resident faculty program where senior, accomplished, established investigators from an international pool spend 3-4 days every year at BSI. The non-resident faculty will make judgments on important issues like faculty promotion and appointment. A standing group, with long-term appointments (for example, 6 years), can develop an in depth knowledge of the BSI and a sense of the development of the institution over time. At the Salk Institute these individuals are full-fledged faculty members who vote separately on promotions. This has the advantage of providing the BSI and its senior administration with independent input, free of potential conflicts of interest. The non-resident faculty also can provide mentoring and advice to junior faculty and students, and a connection with the international community.

## **II. INTERDISCIPLINARY TRAINING IN BRAIN RESEARCH**

#### A. Graduate School

It is a special and particularly remarkable feature of BSI that it harbors, under one roof, the most important disciplines of modern neuroscience and supports them with cutting edge technology. In this respect it enjoys better conditions for research than most universities and compares very favorably with other non-academic institutions devoted to basic research such as the Max Planck Institutes in Germany or the intramural part of NIH/NIMH in the US. However, all these institutions suffer a major structural problem in that they cannot grant academic degrees and therefore have no direct access to PhD students. It is well recognized that the ability to attract the best PhD students is essential for the success of research institutions. Therefore, all leading research institutions have created PhD programs in order to recruit the best students worldwide and to harvest the creativity of young scientists. These Graduate schools are not only a major pillar of the institutes' scientific activity but they also contribute substantially to the formation of the next generation of scientists and foster the reputation and international standing of the institution.

The Council strongly recommends that BSI makes every effort possible to found a Graduate School in cooperation with universities in the Tokyo area. BSI, because of its interdisciplinary lay out and

outstanding international reputation is an ideal place to harbor an International Graduate School and to thereby attract PhD students to Japan. Moreover, this program will be unique in Japan as there are no integrated neuroscience graduate training programs in the Japanese universities. Given the growing importance of neuroscience research and the impact of this field on society it is imperative that Japan/BSI seize this opportunity of training given that it is currently one of the most popular graduate training fields in other industrialized countries. Models of such Schools have been developed over the last decade for most of the leading, non-academic research institutions. The International Max Planck Research Schools (IMPRS) are a prime example and their organizational structure could be adapted very easily to the special needs of BSI. Since their creation a decade ago, they have proven extremely successful in catalyzing communication with universities, strengthening international ties and recruiting the elite among the young scientists at an international level.

## B. Postdoctoral Fellows

The Council thoroughly enjoyed meeting with the postdoctoral fellows and learning about their backgrounds and interests. The gender and international diversity of the fellows was quite impressive and provided tangible evidence that the BSI is indeed becoming an attractive training ground for international scientists. The fellows are clearly great ambassadors for BSI and are a great asset for recruiting future fellows and trainees.

The postdoctoral fellows articulated clearly that it is the quality of research and the interdisciplinary approach to neuroscience that made BSI an attractive place for their postdoctoral training. The fellows also indicated that they find the intellectual environment stimulating and the resources fantastic for pursuing their research goals.

When asked about issues that need to be addressed to improve the training environment and productivity, a few items emerged and are summarized below:

1. The fellows would like to experience more scientific interactions among labs. While many of them find the biweekly scientific social activity quite helpful for informal discussions, they indicated that regular seminars and journal clubs (specifically targeted for the fellows) will permit more scientific discussions between different lab members and are likely to enhance collaborations.
2. The postdoctoral fellows felt a need for more formal and structured mentoring activities. Specifically, they were interested in a mentoring program that will expose them to various career choices that include teaching, consulting, and industry in addition to the typical academic research faculty track.
3. While the postdoctoral fellows felt they got excellent advice from their lab mentors on their research project, grant and manuscript writing, many felt they can benefit from mentoring advice on how to run and manage a lab, particularly managing finances and people.

Given these discussions and the experiences of the Council members at their home institutions, it was agreed that the fellows at BSI would benefit tremendously from forming a postdoctoral association (PDA) that can oversee the implementation of activities that address the above issues. The PDA will organize a seminar series in which the fellows identify and invite speakers who are role models and who

can provide insight into various career options in science and can inspire the fellows by sharing their own experiences, the challenges they faced and how they overcame such challenges.

In addition, the PDA will arrange inter-laboratories journal club. Also the PDA might organize meetings in which the fellows can support each other by sharing experiences. Such activities will enhance interactions amongst postdoctoral fellows, will open doors for new collaborations, will facilitate transfer of technologies between labs, and will make the BSI environment more attractive for international fellows. Lastly, the interactions between PDA and scientists within and outside Japan will expose BSI fellows to successful scientists and will enhance their chances of identifying the most suitable career path when leaving BSI. The PDA will require an adequate budget to run the seminar series and allow for food and refreshments at journal clubs, and for meals with invited speakers.

To take advantage of the unique interdisciplinary training environment at BSI, the postdoctoral fellows need to interact actively with their peers in other laboratories in the BSI, and to receive input from other investigators beyond his/her own laboratory. Multi-laboratory group meetings are ideal platforms for providing such opportunities. The Council noted that along with the dissolution of the Group structure, some useful activities previously associated with the Research Group also disappeared. We suggest that laboratories with similar interests within the same Core or across Cores may establish mechanisms for regular interactions among their lab members, e.g., joint group meetings in which lab members of each laboratory have the opportunities to present their work to members of other laboratories. This will provide the much needed opportunity for postdoctoral fellows to practice their presentation skills to people outside his/her own laboratory, to receive advice from their peers and multiple BSI PIs, and to foster resource sharing and collaboration among laboratories.

Given the geographical separation of BSI from the international brain research communities, the Council noted that regular attendance at the international conferences by postdoctoral fellows is of particular importance and should be actively encouraged by PIs and BSI administration, especially for fellows near the end of their tenure at BSI and ready for job hunting.

### **III. FACULTY**

The Council was very impressed with the quality of the newly recruited faculty and with the high faculty morale. The faculty expressed appreciation for the changes in organization made by Dr. Tonegawa since he assumed the directorship of the BSI.

While the faculty appreciate the recent changes, in discussions with them it was clear that some of the faculty would benefit from a clearer description of these changes, especially the revised expectations for evaluation and promotion. In response to the BSI 8th advisory Council Report, the BSI leadership has established a formal mentoring system for junior faculty. The junior faculty expressed appreciation for this dramatically improved mentoring system. They also commented, though, that their mentors sometimes seemed uncertain about these revised expectations. The Council recommends that more effort be devoted to orienting both new and senior faculty regarding these changes and further changes, however subtle, as they are implemented.

To further improve the mentoring system and clarify faculty expectations, the Council recommends that a mid-career, less formal evaluation be provided to junior faculty 3 to 4 years after their appointments are initiated to give them candid feedback on their areas of strength and weakness.

The Council recommends that all faculty have the opportunity to discuss the most important research areas for the BSI, including those targeted for new faculty recruitment. With limited space and financial resources, these will be most important decisions that ensure the BSI's future success. Enhanced faculty involvement in these decisions will maximize faculty support for the long-term goals of the entire institute. Periodic meeting of the entire faculty would provide one venue for ensuring that faculty have current information on BSI policies and have the opportunity to participate in the major decisions of the BSI. As not all faculty will be able to be present at any single meeting, it would be helpful to record minutes that summarize the information provided to meeting attendees and the most important points of discussion.

All junior faculty expressed their strong hope of receiving tenure and continuing their careers at the BSI. Nonetheless, the international Team Leaders expressed uncertainty about their future job prospects after leaving the BSI. The Japanese Team Leaders also shared this concern because of a perception that it would be difficult for them to obtain a faculty position at a Japanese university if they do not obtain tenure at the BSI. The Council recommends that BSI leadership be visibly proactive in facilitating the transitions of faculty whose BSI appointments are ending and provides data on the successful transitions of former faculty members. In addition to relieving stress on current BSI faculty, more proactive policies and more comprehensive information will facilitate recruitment to BSI of the most outstanding new junior faculty.

Family-friendly standards recently implemented in Japanese and western universities should be more fully implemented at the BSI to facilitate the career development of all faculty with children. The Council strongly urges that the BSI give faculty the option of "stopping the clock" for up to one year after childbirth. The Council also believes that expanding the child care facilities to provide guaranteed access to new infants and young children would remove the stress associated with child bearing and rearing. This would clearly help young faculty advance in their careers. The Council strongly supports the current BSI policy that provides a significant childcare subsidy to faculty. The Council believes that this support results in junior faculty more able to focus on their science and helps them in meeting the high scientific expectations of the BSI.

The Council noted that many current faculty are concerned about the financial costs of obtaining appropriate education for their children.

#### **IV. INTERNATIONALIZATION**

Neuroscience is a rapidly growing, interdisciplinary field that is broadly international. It is not possible to fully participate in such a field without a strong international faculty of the highest quality. Japan has a broad and active neuroscience research community and among all the excellent groups in Japan the BSI has the highest number of international researchers. Therefore the international reputation of Japanese neuroscience is to a large extent driven by the BSI. In the last several years the number of international researchers at the BSI has markedly increased.

There are several ways to increase the number of the international researchers at the BSI:

- Encourage faculty, fellows, and students to attend more international meetings and summer courses. This is important for Japanese researchers to gain international reputation and for non-Japanese researchers to maintain connections with colleagues abroad.
- Enhance the international reputation of the BSI by organizing a series of symposia at major research centers to showcase talent and opportunities.
- Advertise courses and conferences at the BSI aggressively to the international community.
- Expand international BSI centers.

There are a number of ways that internationalization of BSI can be further extended to improve recruitment and retention of the best faculty and postdoctoral fellows:

- English is used in the scientific discussion at BSI, but administration and some forms that the scientists must fill out are partly in Japanese. This naturally makes BSI less welcoming for non-Japanese scientists.
- Improve the accessibility of international schools for the children of researchers.
- Improve the website to feature BSI researchers and alumni who are now at major centers around the world.

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