

Report of the 10th Brain Science Institute Advisory Council

I. Overview

BSI continues to thrive and improve. During the past five years, the number of laboratories has decreased, the quality of laboratories has increased, outside funding has increased, all of the most modern research techniques have been adopted, research productivity has increased, and outstanding young and more senior investigators have been recruited. Today, BSI carries out the best brain research in Japan, and it ranks among the top places for brain research worldwide.

II. Postdoctoral Fellows

BSI, having achieved an international reputation as a premier multidisciplinary neuroscience institute, now attracts an excellent and diverse group of postdoctoral fellows from Japan and abroad. RIKEN BSI provides opportunities for fellows to carry out research with excellent scientists who span a spectrum of modern neuroscience and who are supported by cutting-edge technical support. However, in the past, fellows felt that they were somewhat isolated and wished to have more opportunities for increased interaction and for obtaining training in areas in addition to research that will help them achieve their long-term career goals. In response to suggestions made in our last BSAC meeting, they have now established a postdoctoral association and, with support from Dr. Tonegawa and the assistance of Dr. Charles Yokoyama, have undertaken a diverse set of activities that effectively address these needs. These include grant and manuscript writing workshops, alternative career workshops, a joint teaching program with universities in Tokyo to allow BSI fellows to obtain teaching experience, and a mentoring program to improve public speaking skills. In addition, the students host each year an outstanding scientist who presents a public lecture but also interacts informally with the postdoctoral fellows on career issues. They have also formed a women-in-neuroscience group to address gender equality issues. They have hosted a panel of leading female scientists from the Tokyo area and a national symposium in collaboration with the University of Hokkaido.

Our BSAC was greatly impressed by the progress that had been made and by BSI's support of these efforts. In discussion with postdoctoral fellows, we found that they now are generally quite happy, but some felt that BSI could put further effort in helping them

with advancement to the next level in their career.

III. Graduate Students

In the past the BSAC has encouraged RIKEN BSI to increase the number of graduate students, since the BSI multidisciplinary neuroscience environment is optimal for training students in neuroscience. As a result of collaborative efforts with several universities in the Tokyo area, the BSI currently has about 50 graduate students hosted amongst the 40 labs; thus, on average, there is about one graduate student per lab. This low number of graduate students is owing to a long-standing challenge: the BSI is a research institute, not a degree-granting institution. The graduate students at the BSI must be granted degrees from Japanese universities, requiring an agreement between universities and the BSI. The BSAC discussed with the BSI faculty the difficulties of this situation, including a general reluctance of universities to give up prospective students. One benefit to the university would be to list a graduate student's affiliation for publications as both RIKEN BSI and the University. Since the BSI produces very high-quality publications, this connection should enhance the publication portfolio of the university. The BSAC also encourages the BSI to strengthen the ties it has with some university departments.

On a more global scale, BSAC endorses the idea that BSI start its own graduate student collaboration program which would expand the number of host institutions that the BSI could partner with to train students. As for recruiting graduate students, the BSAC suggests that the BSI website explicitly indicates the opportunity for graduate studies (separate from the section on "research opportunities at the BSI"). In addition, in order to increase the recruiting of potential students to BSI, the team leaders (TLs) could give some graduate student recruiting talks at different venues (universities, etc.). New faculty members should be advised on the means by which they can successfully recruit graduate students to their laboratories.

The BSAC did not receive statistics on the distribution of the students in various laboratories, the time to degree, the publications, or the fate of students who have carried out their Ph.D. research at the BSI, which would be helpful in evaluating the graduate program. It also appears advantageous for BSI to enhance the overall training environment for the students, which could be achieved the enabling them to participate in the range of activities developed by the postdoctoral fellows association as well as by

enhancing their ability to interact with each other. One suggestion would be for the next BSAC to receive information on the students and to then meet with them during the meeting to see what additional changes could be made to enhance the training environment and make BSI an even more attractive place to obtain their PhD research training.

IV. Response to earlier BSAC recommendations

The RIKEN BSI 9th Advisory Council Report made a number of recommendations based on presentations and interviews with faculty and postdocs.

1. Improving the recognition of BSI among the international community.

The Report recommended that measures be taken to make the international community more aware of the BSI. In response, BSI launched a highly effective world recruitment tour by Charles Yokoyama and several faculty to major research centers. Other events that brought attention to BSI include a yearly international summer course that is highly popular; an international symposium that was held in 2012 on Neural Circuit Genetics and another symposium sponsored by RIKEN and IPSEN that is planned for 2015; BSI also created an additional special seminar series of (two in 2013) that brings leading international researchers to RIKEN to deliver a research seminar as well as interact extensively with postdoctoral fellows and students.

2. More efficient procurement by computerization. The acquisition of lab equipment and supplies was impeding scientific efforts and the cost of ordered goods was inflated by vendors. In response, BSI introduced an online ordering system in 2011 which was much more efficient than the previous labor intensive system and is now used in 45 BSI labs and 1 non-BSI lab. This has led to a 35% reduction of paperwork and a 56% reduction in manpower. However, the exorbitant cost of equipment and supplies has not changed. One PI told us that a single Matlab license with toolboxes was \$12,000, whereas the equivalent cost at US institutions was less than \$100.

3. Establish a non-resident faculty program. The Report recommended that the BSI should establish a small group of senior, accomplished faculty who could visit RIKEN annually to provide advice to the Director and important issues such as faculty promotions. BSI did not establish such a non-resident faculty program because of financial constraints and RIKEN's system of governance. Given that the Advisory Council has some degree of continuity

they might in the future take on some of these responsibilities, as outlined in section II.

- 4. Forming an official graduate training program.** The Report strongly recommended BSI to create a Graduate School in cooperation with universities in the Tokyo area. This was not pursued because of the MEXT/RIKEN policy. However, collaborations with graduate programs at neighboring universities have been pursued, as outlined in section I.
- 5. Improving career development for postdoctoral fellows.** Postdoctoral fellows were receiving excellent scientific training in labs but were in need of career counseling and improvements in writing and speaking skills. In response, 1) BSI established Postdoctoral Fellow Association (PDFA) and has supported a budget and a dedicated lounge; 2) a bi-weekly, BSI Brain Lunch seminar series was started with postdoctoral speakers; 3) over 2/3 of all postdoctoral fellows took advantage of opportunities to attend international conferences and symposia.
- 6. Mentoring for junior faculty.** A formal mentoring system was established in response to a recommendation by the 8th Advisory Council Report, but junior faculty were still uncertain about expectations for promotion and how well they were doing. In response to the 9th Advisory Council Report, a mid-term review system was introduced for Team Leader and Unit Leaders. This feedback is valuable, especially when it is critical and constructive. Timely feedback following the review would be most effective. BSI also provides active help to both domestic and international PIs who are leaving BSI, which included 3 voluntary and 12 non-voluntary faculty departures in FY 2011-FY2013.
- 7. Faculty Meetings.** The Report recommended an all-hands faculty meeting to discuss important issues and disseminate information that affects lab planning. Although such meetings occur now on an ad hoc basis when there are important issues to discuss, it is still worth considering the possibility of a regularly scheduled general faculty meeting perhaps once per year.
- 8. Policies for faculty with children.** In response to the recommendation that BSI should “stop the tenure clock” after child birth, both male and female tenure track PIs now receive a full one-year extension of the tenure clock.

V. Budget

The total budget of RIKEN BSI has increased slightly from FY 2013 to FY 2014. A closer look at the distribution of funding sources and spending targets, however, shows some changes that have profound implications on the future of the Institute. Since last year, there has been roughly a 40% decrease in the direct BSI budget that requires each laboratory to contract its operations. The overall BSI funding increased slightly in FY 2014 only because of \$20 million in contract funds that are targeted for specific purposes. Such targeted funding influences the kind of science that can be pursued, with specialized big science projects taking over from the innovative work going on in the individual BSI laboratories. BSI laboratories are feeling the effect of the funding restrictions: they must survive on total budgets that are 5% to 30% smaller, increase spending on resource centers that have lost supplementary support, and pay, out of the laboratory budgets, for postdoctoral housing that had previously been supplied by the Institute. Altogether, the decrease in individual laboratory budgets is greater than 5% to 30%. If this trend is continued, the laboratories will have to fire personnel, with the consequent decrease in scientific output. The Advisory Council recognizes that if the Institute suffers further budget restrictions, it may be necessary to review laboratories at all levels (senior team leader as well as team leader) in order to allocate the diminished resources most efficiently.

Beyond how the individual laboratories are affected, the budgetary restrictions will have negative consequences on the vigor of the Institute. There are fewer laboratories, by about 30%, in 2014 relative to 5 years ago, though most of the decrease occurred at the level of the unit leader position. The Advisory Council is concerned that unless the Institute can continue to recruit new junior laboratory heads, the level of innovation and excitement will deteriorate. Recruitment for new laboratories requires start up funds, and the current financial situation does not allow even replacement due to attrition.

Another critical use of institute resources is to maintain BSI's profile as an international resource of neuroscience research. This requires support for travel and outreach activities to enable international fund raising and collaboration-building for BSI faculty, postdoctoral recruitment, and organizing international symposia. Having a global funding strategy could help BSI recover from budget cuts, and renew BSI as the flagship of the internationalization of neuroscience in Japan.

In general, the most successful scientific research requires a degree of stability and consistency of funding. Suspend projects on short notice is difficult, and equally

difficult to make efficient use of short term allocations of funding. Ear-marking of funds for a small number of expensive projects, when taken from the efforts of individual small laboratories, necessarily has a detrimental effect on research productivity. Ultimately, the greatest benefit to translational research comes from extended periods of research on basic mechanisms. Such research has been the most effective engine for the health and economy of societies at large.

VI. Place of BSI in World Neuroscience Research

Since it was started in 1997 by Dr. Masao Ito, the RIKEN BSI has established itself as a worldwide resource for investigations into brain function in health and disease. Research completed at RIKEN BSI has made seminal contributions to understanding the genetic, molecular and cellular mechanisms that underlie human memory, cognition, sensory perception, and behavior. RIKEN investigators have also made important contributions to our current understanding Alzheimer's disease, autism spectrum disorders, and other developmental and behavioral disorders. RIKEN BSI has also been a center for creation of novel technologies, such as new fluorescent proteins, small molecule sensors and innovations in microscopy that have been adopted worldwide by neuroscientists. Through its summer courses and trainee-ships, RIKEN BSI has contributed to the education of a large international cohort of scientists, many of whom now have academic positions in universities in Europe, the United States, and elsewhere. Thus, as a result of Dr. Ito's initiative and the powerful leadership of his successors, including Susumu Tonegawa, the RIKEN BSI is now considered not just a leader in neuroscience within Japan, but also worldwide. Consequently, it is reasonable and appropriate that RIKEN BSI seek international biotech, pharmaceutical, and philanthropic support to help it sustain and increase its fundamental contributions to understanding brain function and discovery of treatments for human degenerative and behavioral disorders. In turn, the important research contributed by pioneering RIKEN BSI scientists will continue to provide a platform for efforts to translate basic understanding of the brain into clinical improvements, to benefit individuals and society at large, both in Japan and throughout the world.

MEMBERS OF THE 10th BSI ADVISORY COUNCIL

No	Name	Affiliation
1	Prof. Charles F. Stevens (Chair)	Molecular Neurobiology Laboratory Salk Institute
2	Prof. Lynn T. Landmesser	Department of Neurosciences School of Medicine Case Western Reserve University
3	Prof. Mu-ming Poo	Department of Molecular and Cell Biology University of California, Berkeley
4	Prof. Louis French Reichardt	Department of Physiology, University of California, San Francisco
5	Prof. Terrence J. Sejnowski	The Computational Neurobiology Laboratory Salk Institute
6	Prof. Wolf Singer	Department of Neurophysiology Max Planck Institute for Brain Research
7	Prof. Denis Le Bihan	NeuroSpin
8	Prof. Charles D. Gilbert	Laboratory of Neurobiology, The Rockefeller University
9	Prof. Ikue Mori	Division of Biological Science, Graduate School of Science Nagoya University
10	Prof. Yasushi Miyashita	Department of Physiology, School of Medicine The University of Tokyo
11	Prof. Richard W. Tsien	Department of Physiology & Neuroscience NYU School of Medicine
12	Prof. Erin M. Schuman	Department of Synaptic Plasticity Max Planck Institute For Brain Research
13	Prof. Nikos K. Logothetis	Max Planck Institute

✕Absence