RIKEN BSI 8th ADVISORY COUNCIL REPORT

February 18-20, 2009

The BSI Advisory Council met February 18-20, 2009. Present from the Advisory Council (AC) were professors Sten Grillner Karolinska institute, Sweden (chair), Heinrich Betz, Max-Planck Institute, Germany, Stephen Heinemann Salk Institute US, Ichiro Kanazawa, Council of Scientist, Japan, Mitsuo Kawato ATR, Japan, Lynn Landmesser, Case Western Reserve University,, US, Yasushi Miyashita, The University of Tokyo Japan, Richard Morris, Wellcome Foundation UK, William Newsome Stanford University US, Mu-Ming Poo University of Callifornia at Berkeley, US, Hideyuki Okano, Keio University Japan, Janet Werker University of British Columbia, Vancouver, Canada, David Willshaw, University of Edinburgh, UK, and Torsten Wiesel Rockefeller University US.

At the AC-meeting, the RIKEN director Dr Noyori, welcomed the Review committee, and Dr Keiji Tanaka, Acting Director of BSI gave an overview of current BSI activities, achievements and problems. This was followed by presentations of each of the four core directors and a brief presentation of the incoming Director of BSI Susumu Tonegawa, who will take up the Director position from April 1st 2009. Because discussions with RIKEN and BSI leaderships were still in progress at the time of the AC meeting, Dr Tonegawa could provide only brief plans for BSI. The Council thus has reasons to expect certain changes in the structure and management style of BSI. The AC had, however, to base its recommendations on the information made available to the Council at the time of the meeting, and the written report concerning the achievements of each BSI laboratory.

INTRODUCTION

One of the greatest unsolved mysteries is the workings of the brain, the most complex organ created by biological evolution. To address the question of the intrinsic function of the brain, RIKEN BSI was founded in 1997 with the additional task to unravel the mechanisms underlying the many devastating diseases of the brain that make patients and relatives suffer. The diseases are serious and long-lasting, no less than one-third of the cost for health care in the Western world is due to diseases of the brain of both neurological and psychiatric origin.

Within 12 short years, BSI has grown from a mere dream to an established position of international leadership within the world of neuroscience. RIKEN BSI is now recognized the world over as one of the most prominent and productive centres for basic and applied research into the brain. By any measure this is a remarkable achievement. Any country would be proud to be the home of a brain science institute with so many talented, creative researchers. That so much has been accomplished at RIKEN BSI in so short a time is a credit to the vision of the RIKEN leadership in establishing BSI, to the wise and generous support of the Japanese government in funding BSI, and to the dedicated leadership of the BSI Directors and their senior colleagues in recruiting and encouraging the most talented young investigators in all areas of neuroscience from Japan and other areas of the world. Researchers at RIKEN have been recognised internationally in a number of ways since the last Advisory Council in 2006. Masao Ito received the American Gruber Prize in Neuroscience in 2006, and became a member of the US National Academy of Sciences, Keiji Tanaka received the IPSEN Neuronal Plasticity Prize 2007 and Atsushi Miyawaki the Tsukahara Prize in 2007, and Shun-Ichi Amari a prize from the Japan Applied Mathematics Society. Altogether 39 International or Japanese prizes were awarded to researchers at BSI during the last three years.

A large number of disciplines with different methodologies, approaches and traditions are needed to understand different aspects of brain function. Psychologists, linguists and ethologists describe the ability of the nervous system to generate different aspects of behaviour in man and animals. Molecular and cellular neuroscientists in turn describe the operation of the nervous system at the cell, synaptic and microcircuit level, and also how the nervous system is put together during development with great precision from the single cell level to a mature nervous system. Other neuroscientists address the neural bases of psychiatric diseases, such as schizophrenia and depression and neurological diseases such as multiple sclerosis, Alzheimer´s and Parkinson´s disease. Brain imaging with PET, MRI and magnetoencephalography (MEG) enable the discovery of which parts of the brain are involved in different behavioural tasks – when we feel sorrow or are clinically depressed and so forth. All of these ten to fifteen different disciplines contribute, each with its particular approach and methodology to the understanding of the many different functions of the brain from learning and memory, action and perception, and of all the different disease mechanisms. To understand the brain in all its aspects is a major undertaking that will continue to involve neuroscientists all over the world for many decades. The role of BSI is thus to contribute to this process as efficiently as possible over many years to come. The task of BSI is thus very different from that of, for instance, the Human Genome project, which by nature represents a time limited operation, which may apply also to some of the other RIKEN institutes, but clearly not to BSI.

The Advisory Council was very gratified by the response of RIKEN BSI to the report of the 7th Advisory Council held in 2006. We recognize and appreciate the leadership and efforts of Drs. Amari and Tanaka to implement the recommendations. Among the positive responses that we noted are:

- that our suggestion that all investigators be encouraged to apply for external funding, both *as individuals and as groups has been implemented and now represents around 10% of the funding to BSI.*
- *that the difficult questions raised with regard to recruitment of unit heads and lab heads, and the career structure in BSI have been dealt with in a thoughtful manner, and was tabled by BSI as the subject for discussion at the current Advisory Council meeting.*
- *that a new animal facility is being built that will solve the severe problems noted by the previous Advisory Council*.

Recommendations and concerns

Recruitment and turnover of laboratories

To reach the top 5% of brain institutes world-wide, BSI must accomplish two critical goals simultaneously: BSI must retain its very best senior researchers while creating intellectual renewal by hiring a steady flow of outstanding young researchers. The senior researchers are essential for providing scientific leadership and nurturing the careers of young researchers. In turn, the young researchers are the essential source of creative energy that will keep RIKEN BSI at the leading edge of the field over the coming decades. Both of these goals must be met within the context of the current steady-state number of PIs. To accomplish this, BSI will need to become even more selective in recruiting and retaining PIs.

New PIs must be selected on a competitive basis from a world-wide pool of candidates, and successful candidates should be among the very best young researchers in the world. We recommend that international reviewers should take part in the selection process.

To make room for a continuous infusion of new young faculty, established researchers should normally expect to leave BSI for positions in academic institutions or industry. We continue to endorse the goal stated by the 2006 Advisory Council:

- *"A period of 5 years, with a single renewal to make a total period of 10 years, based on continuing success, should be the normal expectation" of new PIs at BSI.*
- *An "expectation of turnover" should be built into the system.*

Consistent with this goal, the BSI leadership has encouraged turnover of laboratories during the three years since the 2006 Council meeting, and several new positions for young researchers are therefore becoming available. As BSI enters the mature, steady-state phase of its existence, this kind of turnover is essential for continued health and vitality. We are pleased to see concrete evidence of continued renewal at BSI. Closing existing laboratories involves wise evaluation and a willingness to make difficult decisions. The Advisory Council strongly endorses the recent leadership of Acting Director Keiji Tanaka in establishing these practices. There must be an exceptionally high standard of excellence for laboratories whose lifetime runs longer than a decade at BSI. 15 laboratories (units and laboratories) have been

closed up to February 2009 and it has been decided to terminate an additional nine laboratories before the end of 2010. Thus altogether 24 laboratories will have been planned to be terminated since the beginning of BSI due to a variety of reasons. Some have decided to move from BSI to other positions or retire and others as a consequence of the review process. All in all, this would seem to be a healthy turnover.

Among the current 50 laboratories, 11 have been in BSI for over 10 years (9 laboratories and 2 units). At the end of their current 5 year term, 19 laboratories (16 laboratories and 3 units) will have been at BSI for over 10 years. This may be too many given the total number of PI positions available at BSI, and it will therefore be important to continue the process of turnover and renewal under the leadership of the new Director, Susumu Tonegawa.

There are two possible mechanisms for encouraging continued turnover, thereby raising overall standards at BSI even further. First, the present system of 5-year reviews with possible renewal can be continued, but with higher expectations. The Advisory Council felt that it would be important also to have an in depth evaluation already after the first 5 year period. It may be easier for the BSI researchers who are not quite meeting the high ambitions of BSI to find a new position, when they are in their mid thirties rather than in their early forties (after the second review). Conversely, successful heads of units could be promoted to laboratory heads at the 5-year evaluation.

The current review system stipulates that continuing laboratories should be among the top 10% in the world in their field. The standard for continuation could be raised further, which should create more turnover and open up more positions for new PIs. The Advisory Council is of the opinion that a rigid review system based on the simple reliance on impact factors and citation indices is flawed and counterproductive in that it does not adequately account for the diversity of neuroscience research and how to properly evaluate each type of research. While more difficult to evaluate, the council suggests that PI performance be compared against leading research in the respective areas of neuroscience.

BSI could also allow for a limited number of PIs, carefully selected for scientific excellence and for effectiveness in providing institutional leadership at BSI, to be exempt from undergoing periodic review. These PIs would therefore have a long term career within BSI. This system has both advantages and disadvantages. The primary advantage for BSI is to further the attractiveness of BSI for stellar young as well as established PIs, and for the individual PIs clarity in planning their careers. Most PIs will know from the beginning that their stay at BSI will be no longer than 10 years, and they will be more diligent in planning for post-BSI careers. The PIs who are granted career status will have the security of a longer stay at BSI, and will not have to worry about the possibility of non-renewal at an age when it may be extremely difficult to find an alternative job. However, the faculty with “career status” would still be expected to maintain their science at the highest level and in addition have responsibilities to guide the future of BSI and mentor the young faculty. The disadvantage of this career system is that it would remove one of the BSI distinctive features—making employment contingent only upon continued scientific excellence and productivity. If BSI elects to move to an “up or out” career system for PIs, the current Advisory Council strongly endorses the recommendations made by the 2006 Council:

> *The criteria for career positions should be both scientific excellence and the potential for contributing broadly to the leadership of BSI.*

There should be a time limit, perhaps 60- 65 years of age, after which scientists should switch to a system of rolling contracts based upon performance."

The leadership of BSI should give careful consideration to these issues of PI career development during the coming year. In their report in 2006, the 7th Advisory Council asked BSI to consider this issue seriously. We now feel that consideration of this subject is urgent, for reasons of both financial planning and for the welfare of BSI staff. We respectfully suggest that a full and detailed consideration of this be scheduled for the next meeting of the Advisory Council.

Organizational Structure of BSI

The original structure at BSI was initially divided into three sections; Understanding the Brain, Protecting the Brain and Creating the Brain, together with an Advanced Technology section. Later on, a section for Nurturing the Brain was added. This seemed to be a satisfactory way of conceptually describing the activities within BSI. After the ten year anniversary BSI felt a need to reorganize the activities, into what are now referred to as four core sections.

- Mind and Intelligence Research Core
- Neural Circuit Function Research Core
- Disease Mechanism Research Core
- Advanced Technology Development Core (ATDC)

This new core organization may be taken to express a refocus of the BSI activities on the cognitive and systems/circuit analyses of the nervous system, and perhaps deemphasizing the part of the previous "Creating the Brain" that aimed partially at information transfer to the technology sphere, such as the robotics area and tele-communication. The remaining part, analyzing brain function through modelling has been integrated into the appropriate Cores. Most of these laboratories aim at using computational methods to analyze neural functions at different levels, and it would therefore seem logical to provide links with the experimental laboratories working on similar types of problems, whether cognitive or microcircuit oriented. Some of the computational laboratories have also been moved into ATDC, since part of their work has been to develop new methodology for modelling. While some of the computational laboratories felt it was stimulating to be integrated with the experimental laboratories, they acknowledged the fact that they needed also to interact closely with each other, since they share a common computational methodology, different from that of other BSI laboratories. It would seem important to establish an organization in which both the conceptual and methodological interests of this group of labs and units are taken care of. This is currently solved by a common "group representation" with members from several cores. The interests of the computational laboratories and units should also be represented at the decision making level, so special provision for representation is needed.

The same applies to what used to be the Nurturing the Brain section. The laboratories of this section have been integrated into the first and second Cores, and it should also be noted that RIKEN has a separate Centre for Developmental Biology in Kobe. There are, however, many unique aspects of neural development, including circuit level and cognitive, that are not represented in other developing systems. Thus, given the central role "nurturing the brain" plays in achieving and maintaining optimal brain functioning and in preventing diseases of the brain, we encourage continued attention to the content of this theme.

A unique feature of BSI is ATDC, which is very successful in developing new advanced technology for neuroscience both for cellular imaging and neuroinformatics.

In addition to the four cores there is also a Research Resources Center, an exceptionally well-organized research core facility. It contains not only the animal facilities with confirmed funding for a new building for the mouse facility. It has also a national (and international) zebrafish core facility used by many laboratories also outside Riken and it contributes in an important way to ongoing research at a number of Japanese Universities. There is in addition an advanced neuro-morphological service, bio-material analyses and a support unit for fMRI. This is clearly an important and effective asset for the researchers at BSI and Japan.

The Council appreciated that the new core structure to some degree expressed an ambition to focus on somewhat different sections of neuroscience as before. On the other hand, it appeared somewhat arbitrary to which core different laboratories belong. In each core there is currently a further subdivision with "groups" of laboratories (three to six). The Council had difficulties in seeing whether the group structure fills a significant role in the new BSI organisation (except in the case of the former Creating the Brain labs and units in which the "Group" covered more than one Core) or if it just represents another hierarchical level. If the latter in general is the case, the Council recommended that the subdivision in groups should be abandoned. The Council in general recommends a comparatively flat organisation.

Structure of BSI operations
The new Director plans to institute a steering group including 3 co-Directors (Tanaka, Okamoto and Miyawaki) and the two special advisors (Amari and Ito). The Council recommends that mechanisms should be implemented to ensure input from younger faculty and for the areas of the previous Nurturing the Brain and Creating the Brain.

The council discussed at length mechanisms to ensure that the views of the different BSI laboratories are considered in the process of steering BSI. The organisation at the Salk Institute in La Jolla and Rockefeller in New York were mentioned as useful examples. In both cases there is a council of scientists elected by their peers who discuss important matters such as funding processes and recruitments and so forth. The researchers are elected for a limited number of years to ensure turnover and diverse representation, and one council member chairs the meetings, which are held a few times a year. The BSI director and co-directors should be present at the council meetings but not be formal members of the council. This may represent one good solution, but in any case a better communication within BSI is much needed. The opinions of all the lab and unit heads across all ages should be sought by the steering group on a regular basis.

The Council has also noted the significant progress and applauds the deliberate efforts made by the BSI administration in the last few years in recruiting and promoting talented female scientists into lab head or unit head positions. We also noted that how much these female scientists value the opportunity to become independent investigators and how they have enjoyed the research environment at BSI. This progress has made BSI the leading institution in Japan in promoting gender equality in scientific research. We hope this effort will continue and the leadership role of BSI in this area be further strengthened in coming years.

Mentoring of younger faculty
It is important for both the Japanese and the foreign laboratory/unit heads to receive collegial advice from more experienced faculty. A mentoring system should be set up so that each younger scientist chooses one or two senior faculty to give advice about the different things that might be perceived as a problem. The BSI organisation has rightly been set up to ensure scientific independence of each laboratory/unit head, but sometimes this has led to a lack of needed guidance from senior colleagues.

Budget and Distribution of Resources within BSI

The council is mindful of the budgetary difficulties, which affect both BSI and Japanese science, and which may arise in part from the current global financial crises. However, acknowledging the unique importance of RIKEN BSI to neuroscience in Japan, it is hoped that the current level of funding can be maintained. Any additional reduction in budget will adversely affect the ability of BSI researchers to carry out the cutting edge science that has earned BSI an international reputation.

The previous 2006 council report suggested that all investigators be encouraged to apply for outside funding as individuals and as groups. Council was pleased to learn that since 2006 several BSI investigators and groups have been successful in acquiring outside financial support, including substantial grants from industry. They are encouraged to continue to pursue such funding as this both helps the financial shortfall and demonstrates their competitiveness in neuroscience research within Japan. However it is important that the drive for outside funding does not distort the fundamental nature of basic research at BSI in such a way that excellent science is compromised.

In addition, BSI has critically evaluated the performance of its Research Resources Center with core facilities. It provides excellent facilities, and it has cut costs significantly by terminating services no longer in demand and by being more effective. Thus it is the sense of Council that BSI is being vigilant in attempting to reduce costs.

Council believes that to better optimize the use of available resources, individual laboratories should no longer be provided with equivalent resources, but that a new scheme be implemented to individualize the budgets of different laboratories and units to their actual needs. This suggestion is based on the understanding that the actual costs of neuroscience research may differ significantly between different types of research (e.g. experimental laboratories versus theoretical/computational laboratories). Council strongly supports the new Director´s intention to further increase the amount of flexible laboratory and unit funding and suggests that the base funds be distributed in a flexible and non-uniform manner, which reflects the actual research costs. To achieve this goal, budget applications with justified expense calculations will be required for each laboratory/unit above a minimal level.

In any budgetary change, it will be of the utmost importance to implement an objective and transparent system for deciding on the base funding. The rules should also be clear for the director’s discretionary funds. To evaluate the progress and performance of individual laboratories, the Council feels strongly that a rigid system based on the simple reliance on

impact factors and citation indices is flawed and counterproductive in that it does not adequately account for the diversity of neuroscience research and how to properly evaluate each type. While more difficult to evaluate, Council suggests that PI performance be compared against leading research in the respective areas of neuroscience. It should be based upon the importance and cutting edge nature of the accomplished discoveries and not the fashion of the moment.

For future recruitments, the creation of start-up funds in considered essential. The amount of such start-up must also be non-uniform and reflect the actual needs of the laboratories/units. Their use should be flexible and extend over a period of 2-3 years. Council also appreciates the need for a director's discretionary fund that will provide generous support to outstanding cutting edge projects that may need extra funds.

Training of PhD Students

The council noted the need to increase the population of graduate students in BSI. The vitality and creativity of graduate students often contribute greatly to the success of a research program. As a premier institution of brain research in Japan, BSI should also fulfil its responsibility in training the next generation of neuroscientists. Although there is no formal graduate program at BSI, a number of BSI investigators have been training graduate students from no fewer than eleven different Japanese universities including Waseda University and Keio University. Most of these students are accepted into BSI laboratories through personal relationships with faculty of their home universities or collaborators. Some of them are formulated as a "Cooperative Graduate School Program" with a few local universities. These programs are not readily available to young unit leaders, especially not for foreign PIs. The recent establishment of a formal joint training program with Karolinska Institute is an excellent step. Since the latter program is rather limited in term of students involved, the council feels that it is rather important to formalize one or a few Joint Graduate Programs with Japanese universities that are made uniformly available to all laboratories and units through a transparent and fair system. It is critical that the very best students interested in the research of BSI can be recruited as graduate students, preferably in a competitive way.

The council suggests the formation of a ***BSI task force*** on graduate education in the coming year. The task force will be charged with the duty of formulating a proposal of a Joint Neuroscience Graduate Program with one or a few local universities that includes all BSI PIs as participating members and, with the approval of BSI faculty and administration, to begin the negotiation with the chosen universities on the implementation of the program. This will most likely mean that BSI will contribute to the common research graduate program in a way that benefits both BSI and the partner university. To create a PhD program to which potential graduate students apply with a common competitive admission once a year has proved to be a useful practice in many places.

The Council noted that the situation faced by BSI on the issue of graduate students is not unique. The task force may look into the mechanisms established by the joint graduate programs established between Max Planck Institutes with German Universities, between the Salk Institute and UCSD; between Cold Spring Harbor Laboratory and SUNY Stony Brook (before the establishment of Watson Graduate School). These programs may serve as useful examples for establishing the BSI program. Several Council members (Prof. Betz, and Prof. Heinemann) are familiar with the above programs and will be happy to provide more detailed

information concerning their operations to the task force once it is established. In general, these programs have increased the quality and number of PhD students, and enriched the programs at both partner's institutions. Thus a partnership between BSI and for instance Tokyo University would most likely benefit both parties.

With regard to the training of PhD students, it became apparent that some of the students have a very poor background in general neuroscience outside their particular research project. It would seem important that BSI PhD students, being admitted without appropriate background, should be given some form of formal reading course that remedies this shortcoming. Another complaint was that PhD students, post-docs and also younger faculty felt that they had too few possibilities of getting teaching experience. This was considered a disadvantage when applying for positions at Japanese universities.

Internationalization of BSI

From its original inception, one of the key goals of RIKEN BSI has been to strive for internationalization by appointing investigators from foreign countries. This goal was identified to ensure that BSI researchers are richly connected to other neuroscience researchers around the world in order that they become aware of cutting edge work in other countries, and to help ensure that discoveries made at the Institute are transmitted rapidly. As well, it was recognized that the culture of science varies around the world, and that young scientists from outside of Japan may be more willing to challenge authority and question established maxims. For brain science research to reach its full potential in Japan, the culture of being prepared to challenge authority was believed to be essential to introduce into Japanese laboratories- first at Riken and later elsewhere, as BSI researchers mature and move into other Japanese institutions.

We encourage the continuation of this initiative, while also recognizing that it would be counterproductive to select scientists from abroad instead of even better scientists within Japan. Internationalisation should not be a goal in lieu of excellence, rather part of the various mechanisms in place for achieving it. Promising young Japanese neuroscientists who have had the experience of working in good laboratories abroad should be considered in particular, as their recruitment back to Japan may be easier than those from other countries. We applaud the efforts that BSI has made to recruit scientists from abroad, and note that, in these times of economic uncertainty worldwide, a unique opportunity may exist – given the excellent facilities and funding at RIKEN – to attract neuroscientists from outside Japan. Funds need to be made available to bring international candidates to BSI for interviews, and for stays of several days in order to show them the advantages and opportunities available at RIKEN-BSI..

Recruiting is but the first step in ensuring the goal of internationalization. It is also essential to recognize that once recruited, consideration needs to be given to the steps required to ensure that international scholars need special accommodation. RIKEN has taken important steps to ensure that there are day care facilities available for the children of staff. This needs to be expanded. The fact that there is now a bus directly from Waco City to Narita Airport facilitates transport for researchers and guests to BSI. A remaining challenge, however, is to ensure that the children of international scholars have the opportunity to receive the highest quality schooling preferably in their home language. We note that the American School is over an hour's drive from RIKEN BSI, a distance that has proven to be extremely difficult for families to maintain. We know this is a difficult challenge to meet, but we encourage BSI to

work with the local authorities to attempt to address this situation in order to attract and maintain the most outstanding international researchers

Although the conditions at BSI have progressively improved, it is important to maintain that all laboratories use English for interaction within the laboratory and BSI – or at least as soon as non-Japanese researchers are present. It has been considered a problem in some laboratories that when Japanese technical staff are present they are often unable to follow the discussion, because they do not know English sufficiently well. It would therefore be important for BSI to make further efforts in training them in English. The administrative staff should also be able to interact in English – again it is important to consider knowledge in English when recruiting staff at BSI or to provide training.

BSI has developed an impressive set of international collaborations and agreements (n=44), including formal agreements with MIT, Harvard, UCSF, Karolinska Institute, Institute Pasteur, Ecole Normale Superieur, the Newcastle University and Queensland Brain Institute. To make the outstanding research environment at BSI known to graduate students and post-docs, BSI has for many years organized a very successful summer program with a shorter lecture course, and a longer training program at different BSI laboratories. A further possibility to increase the international exchange with foreign institutions would be to initiate a sabbatical program for foreign scientists.

Collaboration within and outside BSI

Overall, BSI has successfully promoted collaborative research between laboratories within BSI, although this could be encouraged further. In some laboratories we were told that there was little interaction and even a tendency for secrecy. It would seem important to continue the efforts to promote interaction and informal scientific interchange at all levels from PhDs and post-docs to laboratory heads. Retreats of different sorts should be encouraged, and interaction between laboratories with different expertise. This may be important also in the perspective of stimulating interaction between laboratories with Japanese and foreign heads of laboratories.

The report of the 7th Advisory Council suggested the possibility of forming collaborations with industry. This Advisory Council was gratified by the progress in this respect. BSI has launched two collaborative centres with industry; one is the RIKEN BSI-OLYMPUS Collaboration Centre (RIKEN BOCC) with Olympus (June, 2007), and the other the RIKEN BSI-TOYOTA Collaboration Centre (RIKEN BTCC) with Toyota (November, 2007). RIKEN BOCC and RIKEN BTCC will not only support the development of new research technologies in brain science but also contribute to society through the distribution of new application of these technologies.

It is also noted that BSI successfully has created a close collaboration with the newly reorganized Wako-based Institute, the Advanced Science Institute (ASI). Further collaboration with ASI, particularly with its physics/chemistry laboratories, will be beneficial for BSI in developing new imaging technologies for brain science. It may also be advantageous to interact with the RIKEN Kobe Institute, which has a powerful PET/micro PET system for molecular imaging. A collaboration would complement the existing functional MR imaging studies and the in vivo electrophysiological studies at BSI and facilitate in vivo across-modality-imaging approaches in brain science.

An important engagement of BSI is in the development of Neuroinformatics at a global scale. BSI represents Japan and it has participated very actively in the OECD-initiated International Neuroinformatics Coordinating Facility as a founding member. Dr Amari has served as the vice chair. The impressive development of the related Japan Neuroinformatics Center is directed by Dr Usui and is also based at BSI. The collaborative interaction with regard to the PhD training programs with 11 Japanese universities is mentioned above, as well as the international collaborative agreements.

"Ombudsman" at BSI?

Different complaints or practices may arise in a large organisation like BSI, particularly since many different ethnic groups work side by side with different traditions and behavioural codes. One possibility used in similar organisations is to assign one suitable individual as "ombudsman" to whom complaints or suggestions could be forwarded concerning issues that might be difficult to discuss with the laboratory heads or the directors. For instance, rules when it comes to pregnancy appeared to differ vastly between laboratories, in the best cases with excellent extra support for the mother and investigator.

In conclusion

RIKEN BSI has now established itself solidly within at least the top 10% of neuroscience research centres in the world, and BSI and RIKEN should be congratulated for this remarkable achievement engineered by the successive Directors of BSI, Masao Ito, Shun-Ichi Amari and Keiji Tanaka. The central challenge for RIKEN BSI during the coming decade is to move into the absolute top tier of a handful of neuroscience departments world-wide. We believe that this is a realistic goal, and that Japan should accept nothing less. Susumu Tonegawa, the incoming Director of BSI, has led MIT neuroscience into the top 5% in the world, and he is capable of doing the same thing at BSI, given proper support from RIKEN and the Japanese government.

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