

**Opinion**

## **Research Promotion in Nursing, Physiotherapy, Occupational Therapy and Medical Engineering**

— Appeal and Recommendation to the Colleague —

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### **Summary**

Despite of the severe situations of insufficient money, labor, time, and communication, we want to promote the research activity in our university to the level of major institutions. The first step we propose is to acquire the external research grants from public resources. The specific proposal is described in grant application to increase the probability of successful adoption of the grant from the Ministry of Education and Science of Japan.

**Key words** : research, nursing, physiotherapy, occupational therapy, medical engineering

### **Introduction**

Aino University, founded in 2004, is a relatively young university specialized in educating nurses, physiotherapists, occupational therapists, and medical engineers. Counting from the establishment of Aino School of Nursing in 1968, we have so far produced 5,033 nurses, 1,521 physiotherapists, 922 occupational therapists, and 40 medical engineers in about 50 year history as of April 2016.

The student capacity per year of the University is 80 for Nursing, 80 for Physiotherapy, 40 for Occupational Therapy, and 40 for Medical Engineering. In year 2015, Nursing Graduate School has been launched for the graduate students aiming for the master's degree in nursing science. Currently, 1,172 students are enrolled as the full time students. The responsible faculty of the University is composed of 86

full-time members as shown in Table 1. They are quite busy with educational activities, including lecturing and training in practice.

The first author of this article had worked at a national university graduate school of medicine for 33 years until March 2015, serving as the chair of the department of clinical department (psychiatry) for 19 years. After reaching the retirement age, he had started his job as the president of Aino University in April 2015. When we look at Aino University from the eye of a person who has been so used to the situations of a national university, what is most needed to Aino University is apparently the promotion of research activities.

Research activities in Aino University is weak. The number of published scientific papers is small, and it is difficult to say that Aino University is contributing to the academic development. It might be because the first priority is set to

Table 1 Number of staff and scientific papers of Aino University (2011-2013)

	staff number					papers (2011-2013)			
	professor	assoc prof	lecturer	assist prof	total	Japanese	English	Total	per staff
Department of Nursing	9	4	9	4	26	42	10	52	2.0
Department of Physiotherapy	7	4	7	3	21	29	4	33	1.6
Department of Occupational Therapy	6	2	5	1	14	16	13	29	2.1
Department of Medical Engineering	7	2	4	3	16	22	15	37	2.3
Institute for Regenerative Medicine	1	1	1	0	3	0	13	13	4.3
Total	28	12	26	11	80	109	55	164	2.1

increase the passing rate of the national examination for medical specialists, as usually observed in most of schools specialized for paramedical education. Even though the necessary measures to increase the passing rate of the national examinations are quickly determined, the recognition of the necessity and importance of research seems to be unsatisfactory. Under such conditions, we would like to consider the way to activate the research activity in Aino University.

**Principle : What is the difference between university and professional school**

The university is defined in the fifth chapter of School Education Act, in which “the university is described as the institution to bestow a wide knowledge as a center of academia, and to do research and educate deep knowledge and specialty of arts and sciences, and to expand the intellectual, moral, and application capability (Article 52)”. On the other hand, professional schools are described as “the institution to educate deep knowledge and specialty of arts and sciences, and to educate for the aim of developing necessary skills for the occupation (Article 70 of 2).” According to the Japanese Law of Education, the professional knowledge is given in university and also in professional schools. The major difference between universities and professional schools is the presence or absence of research activity. Only in the university, research activity is mandatory by law, which is not the case of professional schools.

We agree to the idea that the matter of the top priority for our university is to educate our student to pass the national examination. However, we should know the fact that the university student is expected to wear the broad knowledge,

art, and science by learning at the center of the academia in addition to passing the national exam. It must be also kept in mind of all of us that any university is required to do research and we should keep in mind the requirement that all university staff is expected to be involved with research activity.

**Status quo : Research activities of Aino University is insufficient**

Aino University has four Departments in the Faculty of Health Science, all of which are the educational department for students aiming for the national qualification. Fortunately, Aino University has many applications for admission because of the high quality of education. The passing rate of the Aino graduates for the national examination is actually very high ; 94.8 percent (100%) for nursing, 97.6% (100%) for physiotherapy, 79.4% (96.0%) for occupational therapy, and 100% (100%) for medical engineering (March 2015 track record, the employment rate is in brackets), demonstrating satisfactory track records. It is apparent that the staff together with the student are working hard aiming for the high passing rate of the national examination, which has been successfully attained as one of our goals.

On the other hand, the research performance of our University is quite unsatisfactory according to Aino University Annual Report 2011-2013. As for the number of research papers in the three-year, 2011-2013, 55 English papers and 100 Japanese papers were published, with the annual average of 18 English papers, and 33 Japanese papers. The number of papers per Department is 52 from the Department of Nursing, 37 from the Department of Medical Engineering, 33 from the Department

of Physiotherapy, 29 from the Department of Occupational Therapy. When the number of papers per staff is calculated dividing by the number of staff of each department, Institute for Regenerative Medicine produced 4.3 papers, Department of Medical Engineering produced 2.3 papers, Department of Occupational Therapy produced 2.1 papers, Department of Nursing 2.0 papers, and the Department of Physiotherapy 1.6 papers in decreasing order.

When we look at the number of the grant from the Ministry of Education and Science of Japan, as a measure of competitive research funding, researchers of Aino University acquired 15 grants as the principal investigator, and 9 grants were obtained as co-investigators under the off-campus principal investigator. In addition to the 24 grants from the public resource, 5 projects were carried out as the joint research projects with private cooperation.

### **Major Issue : Features of research activities in Aino University**

Considering the harsh situations of Aino University in terms of research activity, it is a major challenge for us to resolve how to activate the research in Aino University, where we have insufficient money, labor, and time for it. We would like to propose several measures to resolve this important matter.

#### **1. Advantage : Institute of Regeneration and Rehabilitation**

Institute of Regeneration and Rehabilitation has been established as a research facility of our University together with the Institute for Aging in 2007. After suspension of the Institute for Aging, the Institute of Regeneration and Rehabilitation is the only facility of Aino University specialized for research. Under the leadership of Professor Chizuka Ide as the director of the institute, Dr. Norihiko Nakano and Dr. Takeshi Kanekiyo are actively involved with the research in the Institute, relying on morphological and cellular biological methodology on the regeneration mechanism in spinal cord injury, and they produced many scientific papers in major journals.

We admit the fact that it is unusual and rather difficult to maintain such a research facility for a university of small size like Aino. At the same time we are happy to know that the research activity of the Institute is high enough considering the number of papers per staff, which needs to be recognized properly by our colleagues.

Recent research, especially in biological and medical science, however, requires the integration of different methodology for any significant outcome. The multifaceted research should be considered to attain the high research goal. For example, research on one protein or gene is only possible to gain significant results when the multifaceted integrated research is executed incorporating a variety of research methods including morphological, biochemical, physiological or pharmacological investigation in order to obtain any significant research results. When we think about the trend of scientific research in our time, the research outcome from a single team should be limited, which is one of the problems for the Institute of Regeneration and Rehabilitation is facing. We need to find out the measures to reactivate the Institute. We believe the activity of the Institute should be integrated with the activities of other staff of the University. It will be important to open the way out to the colleagues in and outside of the University to promote the collaboration with inside and outside of the institute. For example, it might be a good way to organize research seminars with researchers inside or outside of the university campus exploring a possibility of collaboration. We hope the colleagues will eagerly contact with the staff of the Institute for possible use of experimental facility and equipments of the Institute in collaborative projects, which will be the advantage to the staff of the Institute and for the researchers of the University.

#### **2. Budgeting : Efforts to acquire public research grants**

Like most of private universities, Aino University is also struggling with financial resources for its management. The expense in education and research is limited, and we know we do not have sufficient research funding. Knowing such a situation, we must aim for the acquisition of research funding from outside, especially from the public competitive research funding. Once we can acquire the research funding to install a decent research equipment, it will be a good start of the research to increase the possibility for getting more funding, which will be the only road to open our possibility. Once we attain the momentum in the move forward, we may need a moderate effort to maintain our research activity.

Status of Aino colleagues in terms of funding from the Ministry of Education, Culture, Sports, Science Research Grant is not sufficient compared with other major universities. Aino colleagues

had submitted in 2015 fiscal year 29 applications for research grant from the Ministry; one to Scientific Research Category (S), one to Scientific Research Category (B), 7 to Basic Research Category (C), 2 to Basic Research (C) Special Category, 14 to Challenging Exploratory Research, and 4 to Young Researchers (B) Category, of which only 3 applications have been adopted in Basic Scientific Research Category (C).

This year, we would like to suggest that all eligible staff of the University to submit an application for the grand from the Ministry. As a general rule, the staff of 39 years old or below should aim for Young Researchers Category (B), and other staff should apply for Basic Research Category (C). Of course, if you are dare enough to challenge the Basic Research Category (B), you can also apply for Exploratory Research.

We want you to know the fact that there is a good reason to apply for the Research Grant from the Ministry of Education and Science even though your application is unsuccessful. Allocation of the budget to each field of research funding is supposed to be prorated by the number of applications to each field. Let us describe the field of nursing science as an example. Even if your application is not adopted, your application has contributed in the field of nursing science, because your application has been counted as one to increase the number of application to the field, which will result in more allocations to the field of nursing. In this way you are indirectly aiding the applicants to the field of nursing. Please be aware that you could contribute to the grant acquisition to your field, even if your application has not been adopted.

We believe the effective way to write a successful grant application form is to do double-checking by senior researchers. Checking with multiple eyes should be helpful to create the better application form with higher possibility of adoption. You may write your application form from your enthusiasm appealing the strength and meaningfulness of your application, which could often be smug and emotional away from the objective logical description. In order to create a more persuading application form, it is useful to take advantage of the wisdom and experience of the senior scientists. This year, we would like to propose the committee for evaluation of the application form for the grant from the Ministry. The committee will select about 15 application forms from the colleagues of Aino University and the member of the committee will be available for checking and modifying the draft application

seeking for the higher probability of successful adoption by preparing the better application together with the applicant.

### **3. Labor : Involvement of graduate students**

For the completion of any research project, a lot of manpower is needed. In many universities, graduate students are often addressed for the actual work in data collection. After the grand design of the research project is sufficiently discussed among the team lead by principal investigator, the team will start collecting the data by experiments and surveys, and a lot of labor force is required which cannot be executed by the principal investigator alone in most of the cases. We think the force of graduate students is essential in actual data collection process.

The Graduate School has been added to the Department of Nursing, and now we have graduates students who can use most of their time for research activity. In near future we are going to add more graduate courses to other Departments of Aino University so that we can rely on the man power of more graduate students for research activity. We believe that the good research can be done by the good collaboration of the faculty and graduate students, which will be helpful in promoting research activity of our University.

### **4. Time : Research time in later evening or weekend**

For most of academic staff of Aino University, research should be enjoyable intellectual activity. New discovery, or new way of understanding should fulfil the intellectual curiosity of us, which should be the most valuable and most exciting experience in life. Such intellectual activity can be allowed to the people who are working in academia like Aino University. There should not be a chance in missing this opportunity.

We understand that education is an important duty for the faculty of Aino University, and we know you are quite busy with teaching during the business hour of the week days. We do not want you to sacrifice your time for teaching at the University because our students need your guidance and support in their study. Of course your dedication in teaching can be highly evaluated.

At the same time, we want you to enjoy your intellectual experience in research activity of Aino University. We think you can spend some of your evening time or weekend time for research because the university facilities are open to our colleagues and students. Just spend some time in

the evening when you are free from your duty in teaching to enjoy your intellectual activity in research for yourself. Some weekend time can be also allocated for your intellectual activity at the university. (For instance, I am writing this manuscript in the afternoon of Saturday, 19 Sep, 2015, in my office of Aino University, which is quiet and comfortable without any telephone calls or paper works to be done.) There is no reason for you to lose the most joyful intellectual activity as the staff of Aino University. Please make use of your time in the evening or weekend to experience the intellectual activity such as research at Aino University.

#### **5. Communication : Seminars aiming for collaboration**

There is a need for up-to-date information for the good quality research. We exchange the information in our research topics by attending academic meetings, reading papers in the latest journals, discussing with other researchers in the field and so on. Such academic exchange of information can be started from the familiar place. The exchange of information within Departments or within the University can be promoted through seminar on campus. We want to set up the platform of information exchange in our university, which should be useful to exchange views and ideas among researchers. We would like to observe such activities on campus.

#### **Conclusions**

Research is the top enjoyment of life. Only the university staff can be involved in research activity in full scale. We believe the staff of our university are lucky person who can enjoy intellectual activity in our university. Research can be initiated by any staff of the university only if he is motivated to do so. Think you are given a good fortune to be the staff of Aino University, which is trying to promote more research activity on campus. We all want you to make use of full privilege of your profession as professors and researchers of Aino University. Your life with high research activity will make the best of your life.

There might be a good and bad luck in research. If you are lucky, you will attain the great outcome from your research, but it is not always so. If you keep your steady efforts in your research long enough, however, it is always possible for you to achieve your goal in research. Research does not tell a lie. When you have achieved your goal in your research, you will be happy, making people around you happy, putting Aino in more social recognition, which is the goal we are aiming for. Depending on the field of your study, you may not gain attention from others for a certain period. We believe, however, you will be shining under the spot lights one day in a decade if you accumulate your efforts in your research without changing your specialty chasing the superficial trend. Launch your endeavor and good luck to your research in Aino University.