

## Female Researchers in Japan

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### 1. Study Objectives and Method

With equal opportunity for men and women in the science and technology field, and from the perspective of securing science and technology personnel in the mid- to long-term, the "This report was compiled to show the present status and future problems of female researchers. This study was conducted through interviews with female researchers and analysis based on existing statistical material such as the "Report on the Survey of Research and Development" by Management and Coordination Agency and the "Report of Basic Survey on Schools" by Ministry of Education.

### 2. Study Outline

#### (1) Advance into higher education

With the need for a high degree of education in order to be a researcher, fiscal 1992 figures for the advancement to higher education by females show that females represented 31.9% of university entrants, and some 17.1% of entrants into natural sciences. By major, the highest proportion of females was in health-related fields (medicine, and pharmacy) at 48.8%. The lowest proportion was in engineering at 6.9%, but even this is evidence of a remarkable increase over the past twelve years.

An even closer look at the majors shows many females choosing areas related to biology and chemistry. One reason for this may be that many female high school students wishing to study science are adept at biology and chemistry but not as skilled at physics.

Furthermore, although there has appeared to be a move away from science and engineering among those wishing to enter university, this is not evident among females.

#### (2) Advance into the research field

Of the 520,000 researchers in the field of natural science in 1992, 31,000 were female. The proportion of females increased from 4.1% to 5.9% in the twelve years from 1980 to 1992.

By specialty, the engineering field accounts for around half (49.3%) of the total researchers, while female researchers represent more than half (51.9%) in the area of health. As such, the ratio of females is highest in health-related areas at 16.4%, and lowest in engineering fields at 1.4%. Nonetheless, the growth in engineering is as large as that in university entrants.

Having analyzed the relation between the ratio of female graduates by major in the past twenty years and the ratio of female researchers by specialty, a strong correlation was found between the two. While the ratio of females is much the same for both in the area of engineering, which has seen a rapid influx of females in recent years, the ratio of female researchers is lower than the ratio of female graduates in the areas of biology, chemistry and pharmacy with their already higher representation of females. Possible influencing factors in this are resignations for child-rearing, the degree of desire to do other work and the response of employers.

Female staff in natural science departments in university account for 1.7% of professors, 3.5% of assistant professors, 7.0% of lecturers and 13.3% of assistants. Thus, the higher the position the lower the proportion, although the increase in these ratios in the past twelve years has been greater the higher the position.

#### (3) The Status of Female Researchers as Revealed by Interviews

Most of the sixteen interviewees replied that they received the same treatment as male colleagues in terms of research themes, overseas business trips and opportunities for education, including studying abroad. Neither did they feel any gender discrimination in respect of conditions. Also evident was the recognition that research itself was a very attractive occupation, despite some severity, that allowed autonomy and freedom of creativity. The biggest impediment to continuing research was given as child-rearing.

The results of the interviews show that research work is physically and mentally demanding, and that it can be disadvantageous for women whose research time is restricted by having and raising children. Nevertheless, with conditions taking shape to allow women to work more easily, such as flex-time and adjusting schedules to each individual pace, many places provide gender equality in work content, educational opportunities and conditions. As such, research can be an opportunity to express one's ability, for those women who wish to do so, and is a worthwhile occupation which will be appropriately evaluated.

### 3. Problems Associated with Increased Participation by Females in Research

Based on the above analysis, programs for the following will need to be investigated in order to increase female participation in research.

- 1) Creating an environment to encourage capable and interested people to select science, regardless of gender.
- 2) Increased participation by female students in natural science.
- 3) Clarifying PR about the advantages of research for females.
- 4) Emplacement of systems to make continuing research easier.