Investigative Survey on the Research Activities and Awareness of Postdoctoral Fellows: Analysis on Career Choices of Postdoctoral Scholars

[Outline of the Survey Results]

Since fiscal year 2005, the First Policy-Oriented Research Group of the National Institute of Science and Technology Policy (NISTEP) has conducted a series of surveys including "Survey on Postdoctoral Fellows and Research Assistants" ("Employment Survey"), "Survey on Trends in Career Paths of Postdoctoral Fellows at 8 Institutions," and "Survey on Research Activities and Attitudes of Postdoctoral Fellows" in order to collect basic data for effectively implementing various types of support for postdoctoral fellows. In particular, the present report analyzes the factors in choosing career paths of postdoctoral fellows based on an internet survey, "Survey on Research Activities and Attitudes of Postdoctoral Fellows" (survey period: November 26, 2007 to January 11, 2008) of approximately 10% of the postdoctoral fellows affiliated with universitiesand other research institutes in Japan.

1. Outline of the Survey

As the method used in this survey, approximately 10% of the postdoctoral fellows[1] affiliated with universities, public research institutes, and similar institutions in Japan were extracted by those institutions as subjects of the survey, corresponding to the ratios of gender and research field. The subjects selected by those institutions responded directly to an internet questionnaire, and a total of 1,564 persons were requested to participate in the survey. Valid replies were received from 1,035 postdocotoral fellows (valid reply rate 66.2%).

Looking at the features of the persons who submitted valid replies by gender, males accounted for 75% and females for 25%. This is only a difference of 2 points from the results of the "Employment Survey" (FY2006 Data)," which investigated the total number of postdoctoral fellows in Japan. By research field, 38% of respondents were classified as Science, followed by 22% in Engineering and 15% in Healthcare. When compared with the "Employment Survey" (FY2005 Data), the present survey showed a higher ratio of persons in Science (7 point difference) and a lower ratio in Engineering (8 point difference).

2. Results of the Survey

① Career paths of postdoctoral fellows

Based on the fact that persons aged 35 years and older account for approximately one-fourth of the postdoctoral fellows in Japan, we investigated its reasons by asking the subjects about their length of experience as postdoctoral fellows (including experience as postdoctoral fellows at institutions other than those with which the subjects were currently affiliated), experience of full-time employment other than as postdoctoral fellows.

- Persons with 5 years or less of experience as postdoctoral fellows (including experience as postdoctoral fellows at other institutions) accounted for 84% of the total. However, in the field of Science, the percentage of persons who continued as postdoctoral fellows for 6 years or longer was high in comparison with the other fields (Figure 1).

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1 As used in this report, "postdoctoral fellows" conforms to the definition in the "Employment Survey"; for convenience, this also includes persons who terminated their student status upon completing the number of years/courses required for their doctoral degree.

2 The total number of persons who were requested to participate corresponds to approximately 10% of the total number of postdoctoral fellows in Japan, which was 16,394 in the data for FY2006.

➢ The percentage of persons who had experienced full-time employment other than as postdoctoral fellows was 39% in the 35-39 year age group and increased to 58% in the 40 year and older age group (Figure 2). By gender, the percentage of female postdoctoral fellows who had experienced full-time employment other than as postdoctoral fellows was 31%, which was high in comparison with the 20% figure for males (see main text, p. 15).

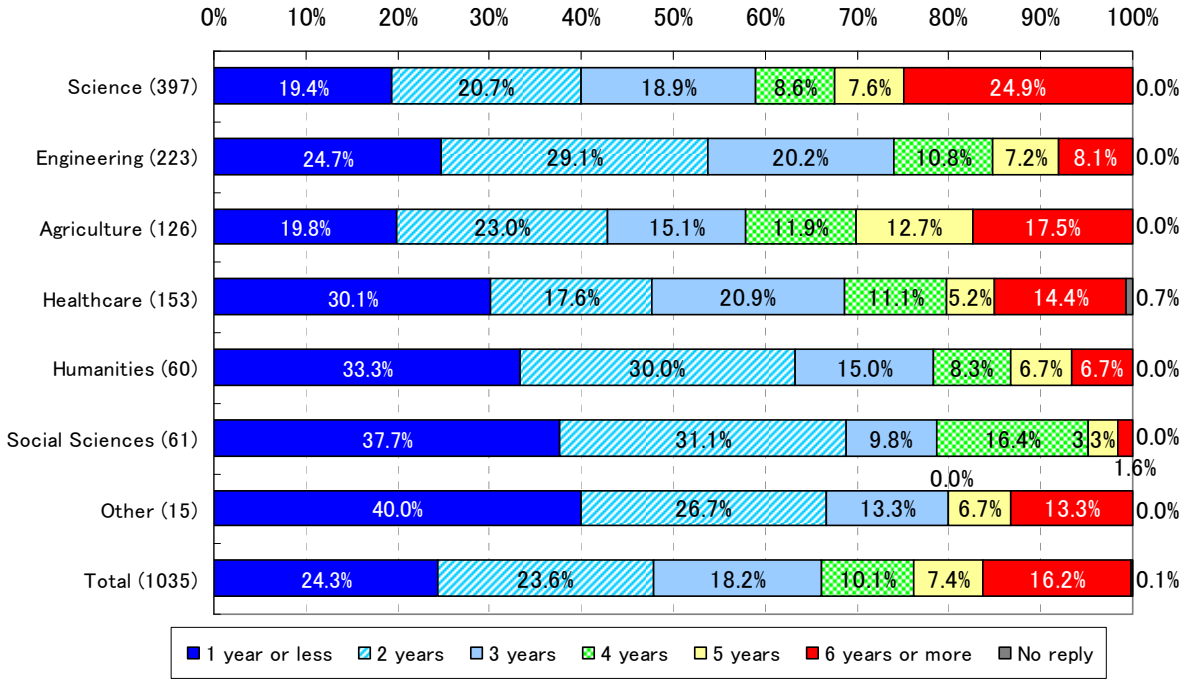

Figure 1. Length of experience as postdoctoral fellows (by field)

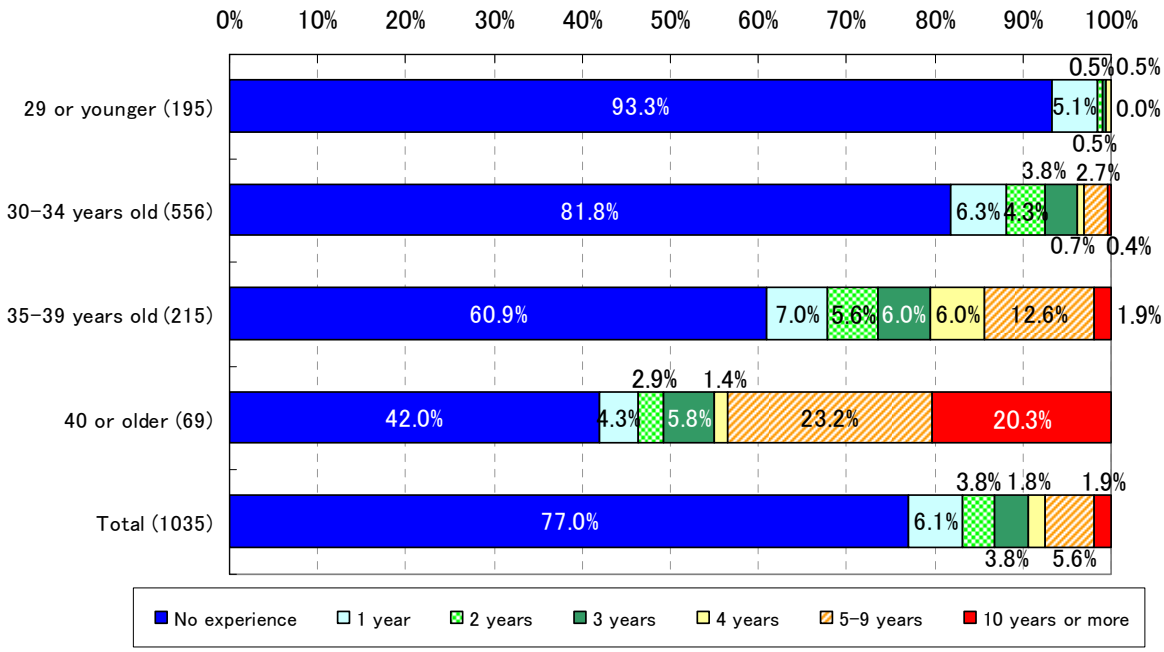

Figure 2. Experience of full-time employment other than as postdoctoral fellow (by age)

② Past factors in selecting career path as postdoctoral fellows

In order to assess the history and consciousness of postdoctoral fellows up to the time of their employment in their current positions, the age when the subjects first aimed to become researchers and their main reasons for becoming postdoctoral fellows were investigated.

- Persons who first thought that they wanted to become researchers after advancing to university accounted for 58% of the total (Figure 3).
- Among persons who first thought that they wanted to become researchers while in "Elementary school," "Middle school," or "High school," the percentage for males was 37%, while that for females were 28% (Figure 3).
- In all research fields, those who first thought they wanted to become researchers after entering university accounted for more than half of the total. However, in comparison with the field of Humanities and Social Sciences, higher percentages of postdoctoral fellows in the fields of Science, Engineering, Agriculture, and Healthcare aimed to become researchers while in elementary, middle, or high school (main text, p. 18).
- As the main reasons for becoming postdoctoral fellows, persons who mentioned "Wanted to continue research" and "Wanted to become a researcher" accounted for 73% of the total. In this result, the number of female postdoctoral fellows who "Wanted to continue research" was particularly large (Figure 4).

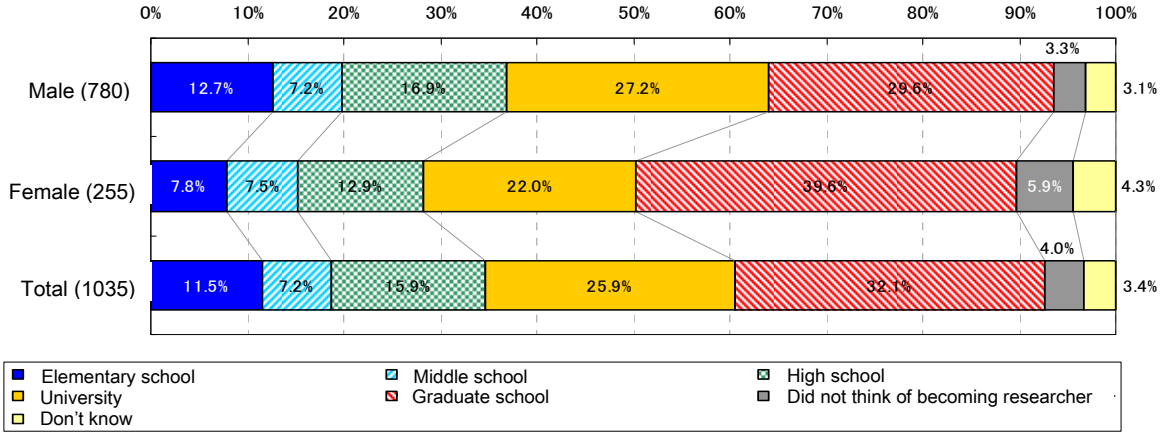

Figure 3. Age when respondents first wanted to become researchers (by gender)

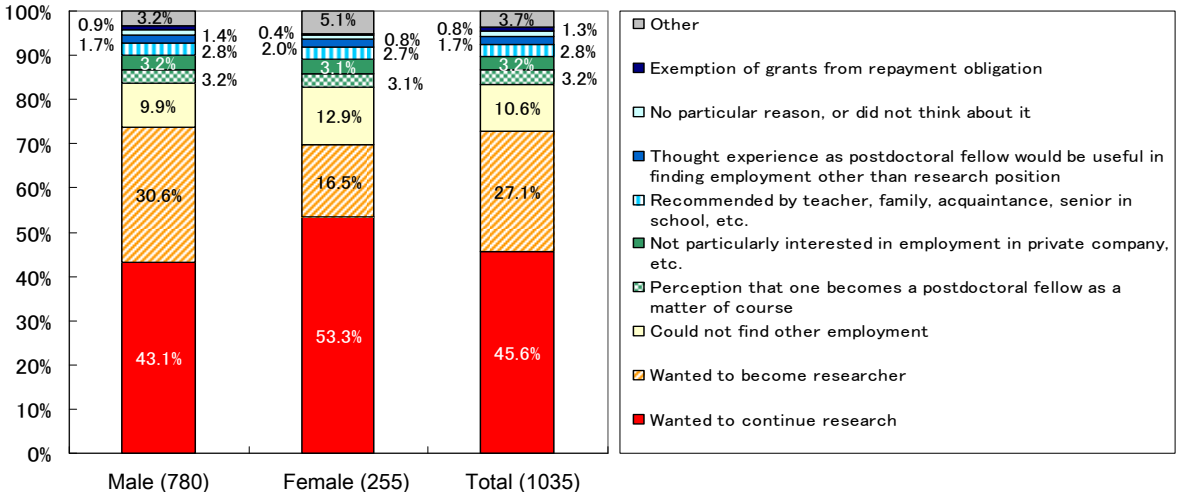

Figure 4. Main reasons for becoming postdoctoral fellow (by gender)

③ Employment options considered by postdoctoral fellows

In response to the question, “What occupations would you find acceptable if actually employed? Please select the most appropriate options, regardless of whether you are currently qualified to apply for such a position or not,” the allowable range of employment options for postdoctoral fellows was investigated by presenting a list of multiple occupations and providing five choices regarding the desire to work in the respective occupations. These choices were “Very positive,” “Somewhat positive,” “Neither positive nor negative,” “Somewhat negative,” and “Very negative.”

- Approximately 3 out of 4 postdoctoral fellows strongly desired to become researchers in universities or public research institutes (including junior colleges and technical colleges) (Figure 5).
- More than half of postdoctoral fellows were positive toward becoming researchers or engineers, including in private companies (Figure 5).
- Almost no difference between males and females is seen in the occupations which were considered acceptable if actually employed. However, females were more positive than males toward “Research support personnel/assistant in university or public research institute,” “National or local government employee,” and “Science and technology related communicator” (main text, p. 38).
- In all fields, the postdoctoral fellows strongly desired to become “Researcher in university or public research institute.” Among postdoctoral fellows in the Science, Engineering, Agriculture, and Healthcare fields, this preference was followed by “Researcher or engineer in private company,” whereas in the Humanities and Social Sciences, the respondents had a comparatively positive perception of “Research support personnel/assistant in university or public research institute” (main text, p. 38).

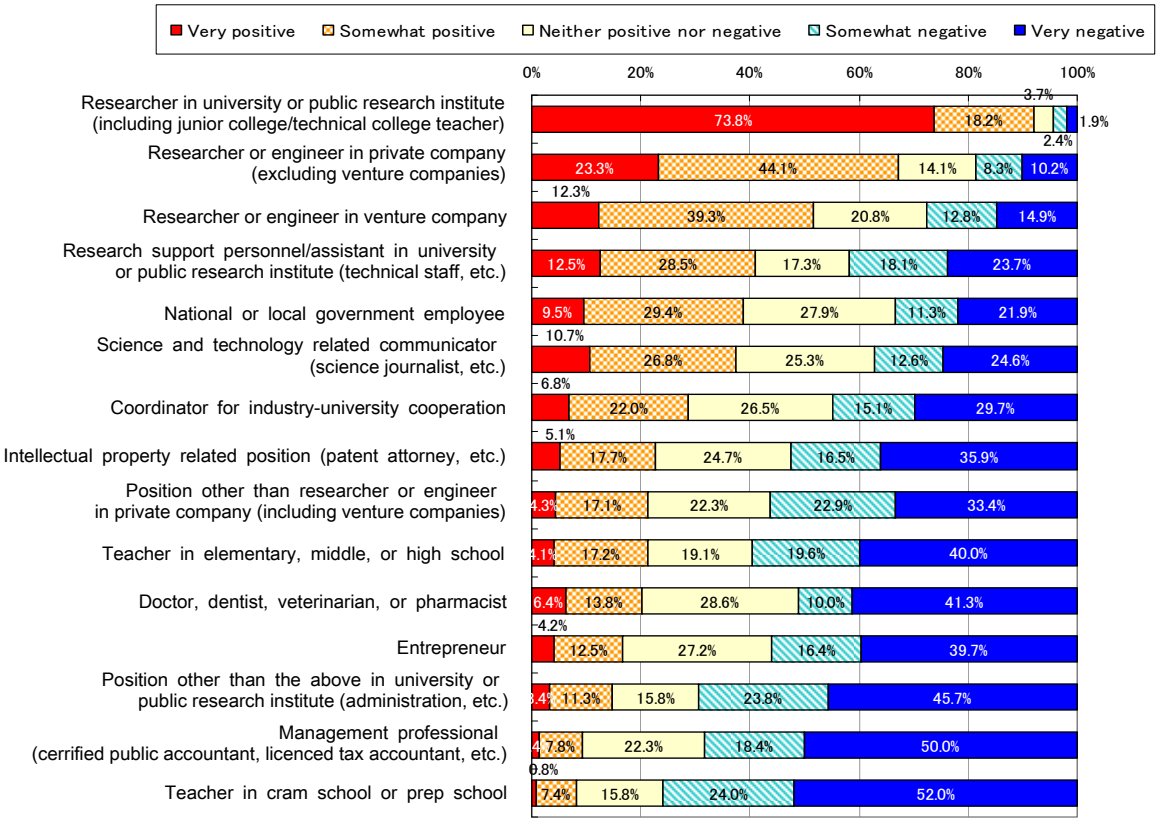

Figure 5. Desire of postdoctoral fellows for employment by occupation

④ Development of career paths for postdoctoral fellows

One conceivable option for smoothly promoting employment in occupations which require skills other than research work is allowing postdoctoral fellows to perform a certain percentage of work that will contribute to career development during their postdoctoral period, if the postdoctoral fellow wishes to engage in such work. Therefore, in order to assess the need for efforts which will contribute to career development during the postdoctoral period, the respondents were asked about work which they would desire to perform concurrently, in addition to their current work as postdoctoral fellows.

- The largest number of respondents desired "Teaching work in a university, etc." in addition to their current research work as postdoctoral fellows, followed by those who desired "Research and development work in a private company" and "Research activities different from current research topic." On the other hand, those who replied that they "Do not particularly desire" activities other than their current research work as postdoctoral fellows were limited to 13% of the total (Figure 6).
- Among female postdoctoral fellows, the percentage of respondents who desired concurrent positions in specialized work other than research and development (communicator position in science museum, etc., intellectual property related work, or similar) was high in comparison with the males (Figure 7).
- Among postdoctoral fellows in the Social Science field, the percentage of those who desired concurrent positions in "Research and development work in private company" and "Specialized work other than research and development work" was high in comparison with the other fields (main text, p. 48).

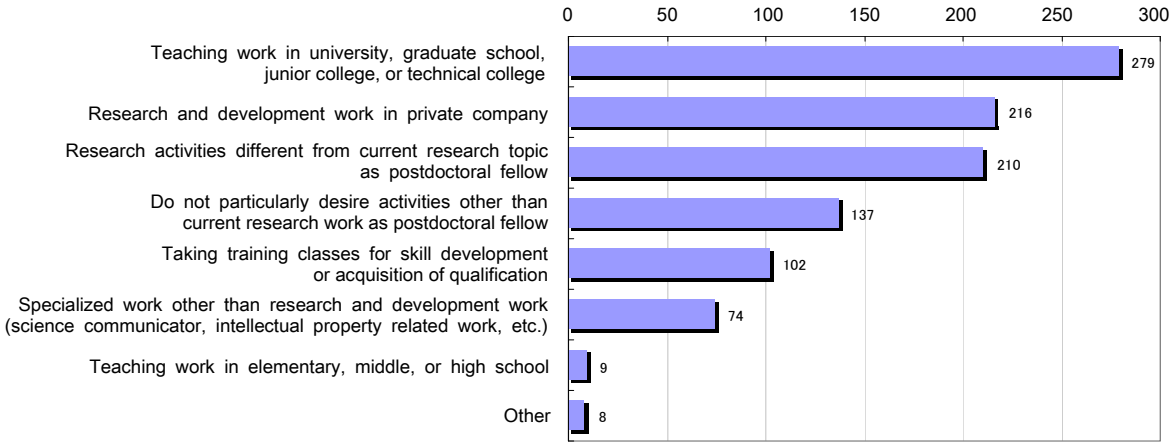

Figure 6. Concurrent work desired by postdoctoral fellows

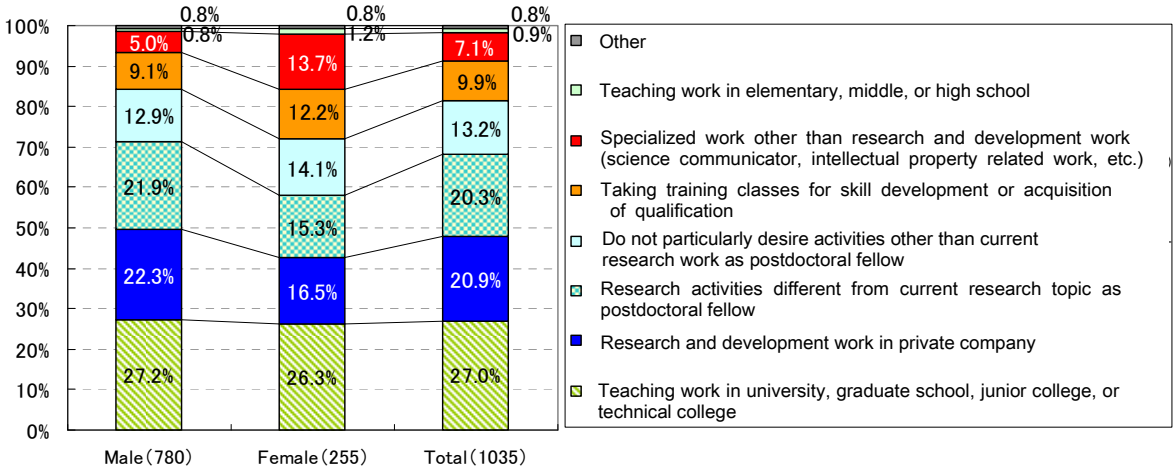

Figure 7. Concurrent work desired by postdoctoral fellows (by gender)

⑤ Job-seeking activities and spouse of postdoctoral fellows

Due to considerations such as the base of family life, etc., the range of job-seeking activities of postdoctoral fellows can be limited. Here, the effect of the presence of a spouse (partner)[3] on job-seeking activities was investigated.

- Among female postdoctoral fellows with spouses, the largest number of respondents replied that they would "Limit range of applications based on circumstances of spouse's job," followed by "Unavoidably live separately from spouse" (Figure 8).
- In cases where the occupation of the spouse was a research position, the largest number of respondents replied "Limit range of applications based on circumstances of spouse's job" (Figure 9).
- In cases where the occupation of the spouse was a position equivalent to a postdoctoral fellow, the largest percentage of respondents replied "Unavoidably live separately from spouse" (Figure 9).

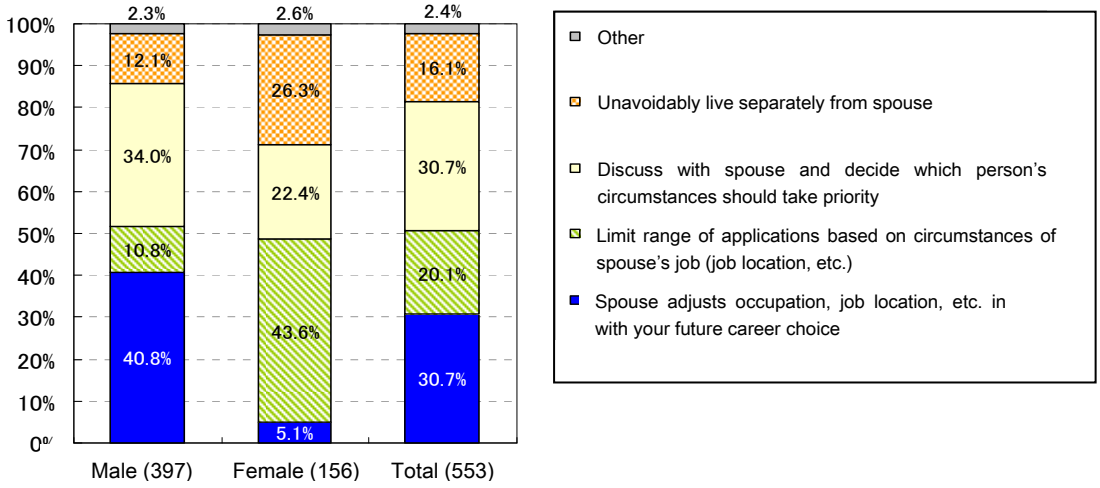

Figure 8 Job-seeking activities of postdoctoral fellows and occupation of spouse (by gender)

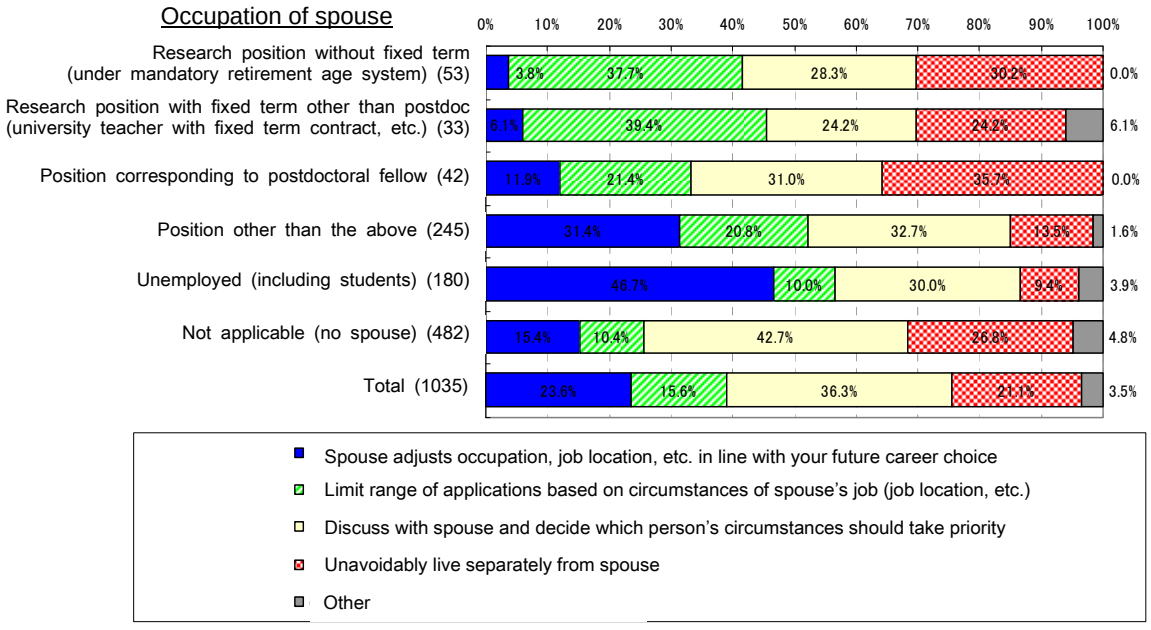

Figure 9. Job-seeking activities of postdoctoral fellows and occupation of spouse (by occupation of spouse)

3 In the questionnaire and main text, the expression "spouse/partner" is used.

3. Summary

Three-quarters of the postdoctoral fellows who were subjects in this survey strongly desire to become researchers in universities or public research institutes (including junior colleges and technical colleges). However, more than half were also positive toward becoming researchers or engineers in private companies, including ventures. A large number of the respondents were also comparatively positive toward working in occupations such as research support personnel/assistant (technical staff, etc.), government employee, science and technology related communicator, etc. When considering future careers, many of the respondents also desired concurrent positions in work other than their current research work as postdoctoral fellows. For instance, in addition to persons who desired concurrent positions in “Teaching work in universities, graduate schools, junior colleges, and technical colleges (teaching duties),” there were also many persons who desired concurrent positions in “Research and development work in private companies” and “Research activities different from current research topic as postdoctoral fellows.” Thus, the impression of postdoctoral fellows which emerges from the results of this survey is of persons who flexibly consider career paths other than researcher in an academic research institution, and who are also forward-looking regarding efforts that will contribute to their own career development.

With the deepening and diversification of the relationship between science and technology and society, it is increasingly important to promote human resources such as postdoctoral fellows who possess advanced specializations in diverse directions, and to utilize the capabilities of such persons. From this viewpoint, it is desirable that each institution supports activities for postdoctoral fellows with a firm view of their career paths after completing their work as postdoctoral fellows, for example, by providing a wide range of opportunities for career development.