JAPANESE WILD MEDAKA, INBRED MEDAKA AND CULTURED MEDAKA CELLS — A REVIEW OF CURRENT STUDIES —

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In our laboratory, medaka *(Oryzias latipes)* has been used as an experimental animal, and we believe that this fish provides a very suitable material in various fields of biology.

In order to obtain basic knowledge of the natural history of wild medaka under natural conditions, Sakaizumi, Egami and Moriwaki of the National Institute of Genetics are studying allozymic variations in wild populations of this species. At present 23 loci in Japanese

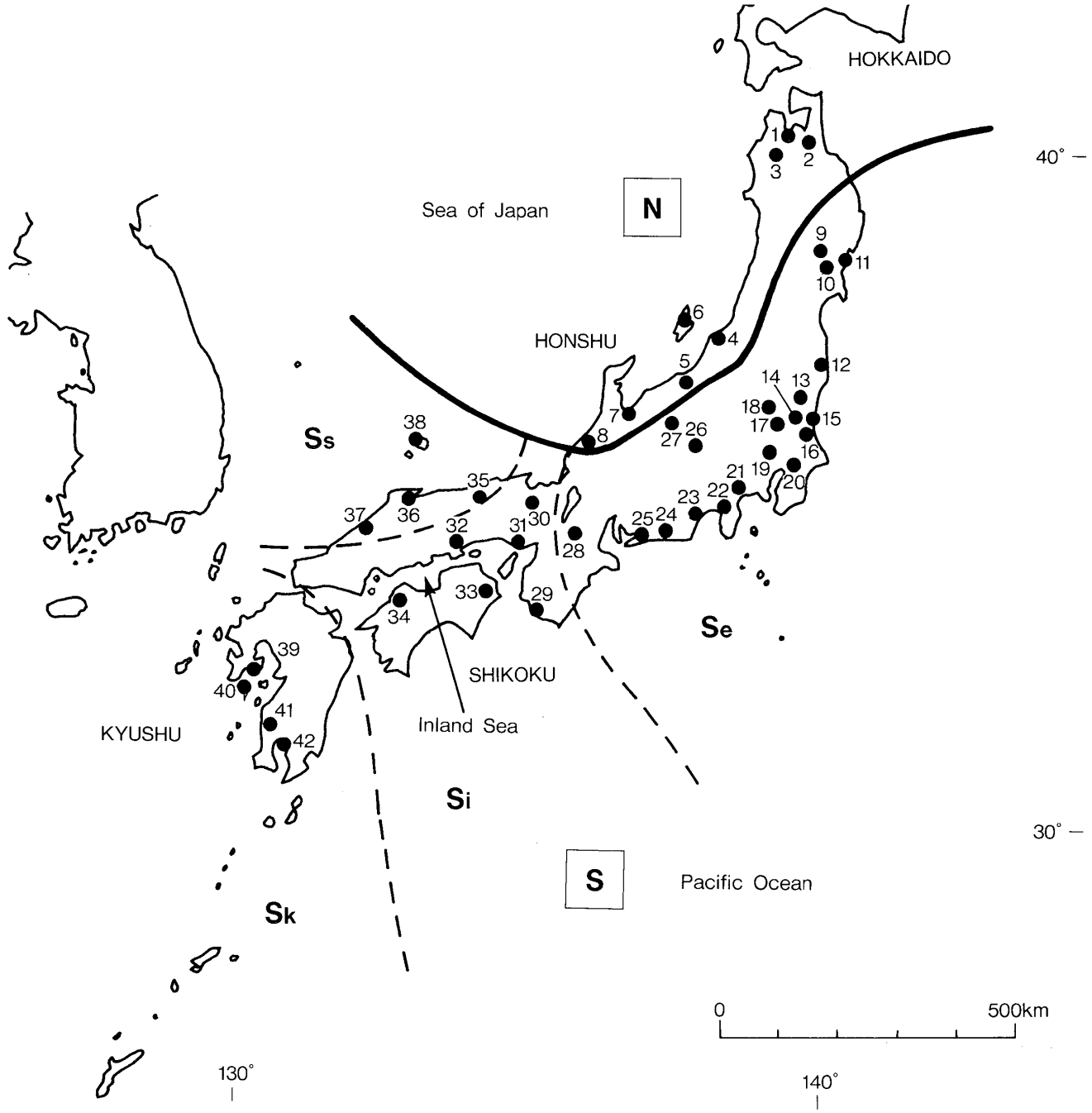

Fig. 1. Map showing different populations of wild *Oryzias latipes* in Japan.

wild populations collected at 41 localities have been examined. As shown in Fig. 1, based on the unique alleles at *Adh, Pgm, Sdh* and *Sod* loci, Japanese populations can be divided into two major groups, "Northern Populations" (N) and "Southern Populations" (S). The latter can be further divided into four subpopulations (Ss, Si, Se, Sk) by the unique alleles at *Acp, Amy, Mod, Pgd* and the electrophoretic pattern of muscle lactate dehydrogenase. The results show marked differences in isozymic patterns of medaka from different regions. Further studies on evolution and speciation of the genus *Oryzias* are now in progress.

In addition, Egami, Kirita and Shimada have examined the characteristics of inbred strains of *Oryzias latipes*. For instance, strain HB 1 is sensitive to ionizing radiation and the life span is shorter than that of the usual orange-red variety. Mechanisms of radiation sensitivity are now being analyzed in strains having different genetic backgrounds.

Furthermore, by treatment with diethylnitrosamine, Mitani has succeeded in establishing a cultured cell line from liver tumor cells originally produced by Kyono-Hamaguchi. The cells grew in a criss-cross manner and have large prominent nucleoli and granules in the cytoplasm. Histochemical assays gave a positive tyrosineaminotransferase reaction and the mean chromosome number was 48. These data indicate that the cultured cells are medaka cells of liver tumor origin. The establishment of cultured cell lines from this species, considerably increased the usefulness of medaka in biological sciences.

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