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Comparative genomics of the mammalian Y chromosomes

The mammalian Y chromosome is known to have evolved from a pair of ancestral autosomal chromosomes. Most of the Y chromosome, which is the male-specific region, does not participate in the meiotic recombination process. This region has male-specific characteristics, such as sex determination and spermatogenesis, and a peculiar genomic structure including abundant chromosomal-specific repeats, large-scale duplications, and complicated chromosomal rearrangements. Mammalian Y chromosome is small and gene poor, meanwhile plenty of the Y chromosome-specific repeats which contain genes or some functional elements are identified.

To elucidate the role and function of the Y chromosome in biological and evolutionary aspects, we carried out comparative genome analysis of the human and chimpanzee Y chromosomes. This comparison clarified that the large-scale structural changes have occurred on both human and chimpanzee Y chromosomes after the speciation, and led us to hypothesize that Y chromosome-specific repeats have formed by the species-specific manner. We keep analyzing several mammalian Y chromosomes to identify the species-specific evolutionary aspects and its relation to the Y chromosome biological functions.

Brief CV

- 1995 Graduated from School of Allied Health Sciences, Faculty of Medicine, Tokyo Medical and Dental University
- 2000 Graduated from Graduate School of Medicine, The University of Tokyo
Degree Ph.D (Health Science)
- 2000-2001 Postdoctoral fellow of Core Research for Evolutional Science and Technology, Japan Science and Technology Agency
- 2001-2003 Research Associate at RIKEN Genomic Sciences Center
- 2003-2008 Research Scientist at RIKEN Genomic Sciences Center
- 2008-present Research Scientist at RIKEN Advanced Science Institute