CHAPTER VI

DISCUSSION AND CONCLUSION

By PCR, both breakpoints of the inversion X were located in the regions rich in the long interspersed nuclear elements. It was possible that the breakpoint on Xq13.1 was mapped to *EDA* intron 4 which explained the ectodermal dysplasia phenotype of the patient. Nevertheless, the Xp breakpoint did not disrupt the recently identified MRX genes and any unidentified gene in the region of Xp22.2. The sequence of both breakpoint-spanning fragments was compared to each other and a sequence with strong similarity was found.

In the present case, however, the breakpoints were identified in region rich in members of the repetitive element family. The breakpoint on Xp22.2 occurred in the long interspersed nuclear element, L1MC5, and a LINE element, L1PA2, spanned the breakpoint on Xq. Moreover, 624 bp of L1PA7 distal to the breakpoint on Xp has 85% homology with the L1PA2 on Xq breakpoint. These repetitive sequences might be involved in chromosome rearrangements. Therefore, this sequence might stimulate homologous and non-homologous recombination within the core or at nearby sites and could be the mechanism of recombination in the X inversion case reported here.

Real-time RT-PCR was carried out for the expression of *FAM51A1* gene flanking the inversion breakpoint on Xp to assess whether the inversion event had affected the expression of the nearby gene that might be the cause of mental retardation in the patient. The results showed that the inversion apparently has no effect on the expression of *FAM51A1* gene.

Although many individuals with ectodermal dysplasia commonly have normal cognitive function, a minority of cases may involve some degree of

mental retardation. In the case of hypohydrotic ectodermal dysplasia, untreated hyperthermic episodes can lead to brain damage and cognitive impairment. In conclusion, the mental retardation of this patient was not the result of the chromosome rearrangement and might be due to neurological damage associated with unrecognized hyperthermic episodes during infancy.