

- O-19. Uniparental disomies in cases of spontaneous abortion and their mechanism:** Shin-ichi SONTA¹, Qing Ying LI², Sami TSUKISHIRO², Chiaki NAKAGAWA¹, and Kaoru SUZUMORI² (¹Inst. Dev. Res., Aichi Hum. Serv. Ctr. and ²Inst ¹Nagoya City Univ. Med. Sch.)

To investigate the involvement of uniparental disomies (UPDs) in spontaneous abortions, we analyzed in detail polymorphism of microsatellites on each chromosome in cases of abortion. Polymorphic analysis of 250 cases with a normal karyotype revealed that, in the villi from 245 of the 250 cases, biparental patterns were present in informative microsatellites in all autosomes. In the remaining five cases, however, the patterns of microsatellites appeared to be both of maternal or paternal origin. In two cases, chromosomes 16 were both maternal in origin. In two other cases, chromosome 14 and chromosome 15 were both paternal in origin. The remaining case was one of partially maternal uniparental disomy. The constitution of iso- and hetero-disomy of each chromosome detected by polymorphic analysis indicated an origin from nondisjunction at meiosis I and II. On the basis of these findings, we investigated the mechanism of UPDs. The present findings suggest that some UPDs may become a cause of spontaneous abortion, similar to trisomies and other chromosomal abnormalities.

- O-20. Reversible Pathways in Polyploid Evolution in Vertebrates: Kenji SAITOH**
(Tohoku Natl. Fish. Res. Inst., Fish. Res. Agen.)

Comparative genomics has revealed possible ancient genome duplication events in vertebrates. Studies of recent occurrence of polyploidy will facilitate understanding the nature of genome duplication in vertebrate evolution. Processes of polyploid evolution have largely been recognized as irreversible, as hybrido- or gynogens are evolutionary dead-ends or bisexual tetraploids are infertile crossing with diploids. Examples in fish, however, indicate reversible pathways in polyploid evolution. Tetraploid *Cobitis striata* is an allotetraploid originated from hybrids between diploid *C. striata* and *C. biwae*. Existence of quadrivalents with homeologous crossing-over suggests evolution of tetrasomy from 2+2 paralogues (counter-diploidization). *Cobitis hankuensis-longicarpus* complex is an all-female diploid-triploid hybrid complex which coexists with its parental bisexual diploid species. Experimental crosses revealed the diploid hybrid is a mother of the triploid hybrid which lays haploid ova. Crossing the haploid ova with one of the parental species regenerates normal diploids. Both parental species and hybrids share a common mtDNA haplotype indicating the diploid parental species actually regenerates in nature. Counter-diploidization and regeneration of diploids indicate that polyploid evolution is reversible at various stages, just as any other evolutionary processes which are reversible and diverging.