

GE 4

CHROMOSOME BANDING ANALYSES IN TWO FORMOSAN AND ONE LAOTIAN SPECIES OF GIANT FLYING SQUIRRELS.

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The giant flying squirrel (GFS) or the genus *Petaurista* is distributed only in India, its neighbouring countries, South East Asia, China and Japan. Few reports have been published concerning the chromosomes of GFS, and thus little has been known to date about the karyo-systematic relationship of this taxonomic group. In this study, we examined, by G-, C-, and NOR-banding techniques, bone marrow and lymphocyte chromosomes of two species of Formosan GFS (*P. petaurista*, red GFS; *P. alborufus*, red and white GFS) and one Laotian species (*Petaurista* sp.) with special attention to their karyological relationship. Their diploid numbers of chromosomes were 38 in all the three species. But, the Laotian GFS resembled *P. alborufus* more closely than *P. petaurista* in the chromosome banding patterns as well as in the chromosome constitution. The relative length of the X chromosomes of these GFS's examined occupied at least 7.22% of the total length of the haploid chromosome complement. So, their large-sized X chromosomes may be worthy of notice as a marked karyological character common to this genus.

GE 5

VARIANTS OF RIBOSOMAL DNA REPEATING UNIT TYPES IN *APODEMUS SPECIOSUS*

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The main construction of ribosomal DNA (rDNA) is similar among the different populations of Japanese field mice (*Apodemus speciosus*) (Suzuki et al., 1988). However, we found two variants of rDNA repeating unit types (repetypes) in the individuals collected from Naganuma (Hokkaido pref.) and Nachi (Wakayama pref.). It seemed that each variant was generated from the standard repetype by mutation at the spacer region near the 3' end of the 28S rRNA gene with deletion of about 0.6 kb and 1.6 kb in length, respectively. The variant repetype of Naganuma was also observed in individuals from Bibai, suggesting wide distribution throughout Hokkaido. On the other hand, the variant of Nachi was not observed in other regions near Nachi, such as Taiji, Hongu, and Kumanogawa, suggesting restricted accumulation within small area.

GE 6

THE POSITION OF SEX-DETERMINING GENE IN DIFFERENT POPULATIONS OF *RANA NIGROMACULATA* AND *RANA BREVIPODA*.

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It has been elucidated that the male is heterogametic and the sex-determining gene is linked with the LDH-B and MPI loci on chromosome No. 4 in the Kure and Kumano populations of *R. nigromaculata* and the Konko population of *R. brevipoda*. In the present study, the position of sex-determining gene was examined in nine males belonging to the Hiroshima population of *R. nigromaculata* and eight males belonging to the Maibara population of *R. brevipoda*. The results showed that in 760 (92.1%) of the 825 offspring obtained from five of the nine males of *R. nigromaculata*, the sex-determining gene was linked with the MPI and SORDH loci on chromosome No. 4, while in 337 (54.7%) and 279 (45.3%) of the 616 offspring obtained from the other four males, it was linked and not linked, respectively, with these loci. On the other hand, in 361 (53.8%) and 310 (46.2%) of the 671 offspring of the eight males belonging to the Maibara population of *R. brevipoda*, the sex-determining gene was linked and not linked, respectively, with the MPI and LDH-B loci on chromosome No. 4, in contrast to the Konko population of the same species. However, it was found that the sex-determining gene was linked with the ME-B locus on chromosome No. 3 in 274 (97.9%) of the 280 offspring.

GE 7

THE DIFFERENCES IN RECOMBINATION RATE BETWEEN MALES AND FEMALES IN CHROMOSOME NO. 4 OF THE *RANA NIGROMACULATA* GROUP.

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In the *Rana nigromaculata* group, six enzyme loci, the LDH-B, Pep-B, HK, ENO, MPI and SORDH, are arranged on chromosome No. 4 (Nishioka, Ohtani and Sumida, 1980, 1987). The present study was to confirm the existence of differences between males and females in recombination rate at these loci. The enzymes were analyzed by starch-gel electrophoresis in the 5231 offspring derived from 16 males and seven females of *R. nigromaculata* and *R. brevipoda* which were heterozygous at more than two loci, and the recombination rates between these loci were calculated. The results showed that in *R. brevipoda*, 226 (48.6%) of the 465 offspring of the six female parents which were heterozygous at the LDH-B and MPI loci were recombinants. On the other hand, only two (0.1%) were recombinants in the 1591 offspring of the eight male parents which were heterozygous at the two loci. In *R. nigromaculata*, 265 (27.3%) of the 972 offspring of a female parent which was heterozygous at four loci, the HK, MPI, Pep-B and SORDH, were recombinants. In the 2203 offspring of the eight male parents which were heterozygous at five loci, the ENO, HK, MPI, Pep-B and SORDH, only two (0.1%) were recombinants. Thus, it was found that the males in both species were extremely small in recombination rate in contrast to females.