

DETECTION OF RIBOSOMAL GENES IN THE GENUS *ORYZA* THROUGH FLUORESCENCE IN SITU HYBRIDIZATION

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The 18S-5.8S-28S ribosomal RNA genes (rDNA) occur as tandem repeats in a hundred or more copies at nucleolar organizing region (NOR) on one or more than one chromosomes in a haploid genome. rDNA are highly variable in size and location in plant genomes.

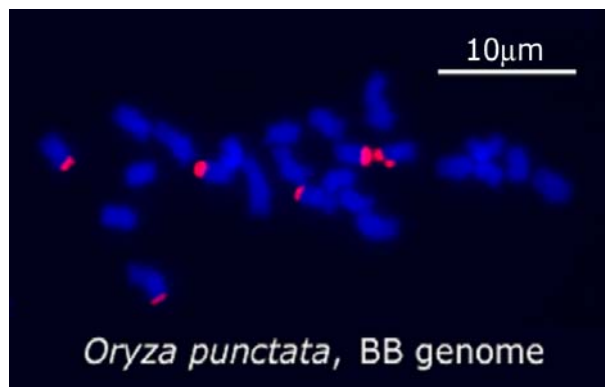
Variations in the number and distribution of these sequences of closely related species have revealed valuable information on chromosome evolution and genome organization [1].

Numbers of rDNA loci range from one to three among the *Oryza* species. Both *O. sativa ssp. Japonica* (AA genome, cultivated rice) and *O. australiensis* (EE genome) had one rDNA locus at the short arm end of chromosome 9. *O. sativa ssp indica* (AA genome) and *O. officinalis* (CC genome) had two rDNA loci at the short arm ends of chromosomes 9 and 10, respectively. The fluorescent signal on chromosome 9 was more intense than that on chromosome 10. *O. punctata* (BB genome) had three rDNA loci in its haploid genome. In addition to those two rDNA loci located at the short arm ends of chromosomes 9 and 10, the third rDNA locus was mapped at the short arm end of chromosome 4. Tetraploid species, *O. punctata* (BBCC genome) had five rDNA loci in its genome. Furthermore, the intensity of the fluorescent signals would reveal the copy number of the rDNA unit at each locus.

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References :

- [1] R. Shishido, Y. Sano, and K. Fukui, Ribosomal DNAs: an exception to the conservation of gene order in rice genomes. Mol. Gen. Genet. 263:586-591 (2000).

Figure 1: The distribution of rDNA (red) loci on the metaphase chromosomes of *Oryza punctata*.