

## **TRANSCRIPTION FACTOR GENES EVOLVED IN A DIFFERENT MANNER IN ANIMALS AND PLANTS**

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Comparative analyses of the genes encoding transcription factor (TF) proteins were completed for 32 organisms. The total number of TF genes has increased from 170 in unicellular red algae to 3400 in soy bean. Most new TF genes appeared during evolution from single celled organisms to multicellular animals and terrestrial plants. The total numbers of TF genes vary more widely in plants than in multicellular animals. Analysis of the features of TF DNA-binding structures revealed that the zinc-coordinating factor genes are especially divergent in animals and that plants are more divergent in genes containing the other DNA-binding domains. Comparisons among various groups of organisms identified stage-specific features of the evolutionary diversification of TF genes. The availability of rice full-length cDNA sequence data made it possible to analyze the alternative splicing profiles of the TF transcripts. Analysis of the relationships among the diversification patterns of TF proteins (alternative splicing, tandem and segmental duplications) and expansion of gene family numbers indicates that the rapidly expanding genes are mainly alternatively spliced and/or tandemly duplicated. On the other hand, genes encoding transcription factors acting as multimer forms also were frequently found to be located in the segmental duplication blocks.